



### ***Introduction and Methodology***

Microchip Technology Incorporated's (Microchip) semiconductor devices are assembled at our assembly facility outside Bangkok, Thailand, and by sub-contracted assembly sites throughout the world. Frequently, the qualified Bill of Materials (BOM) will vary among assembly sites for a given package configuration. The majority of variation lies in the mold compound and/or the internal die attach material used. The semiconductor device material data presented is calculated using a mass balance methodology for the primary qualified assembly site or the most commonly produced BOM.

### ***RoHS Recast or "RoHS2:***

Microchip semiconductor products or devices still fall under the same conditions they were under the old RoHS declarations. Piece parts are still not classified as EEE. Microchip's plastic semiconductor products are still approved for RoHS required designs without exemption. All Ceramic packaged products still contain Pb (lead) and are not recommended for RoHS required applications. FET/PDFN packages utilize EU exemption 7(a) - Pb (lead) in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead).

### ***Ozone Depleting Materials***

Microchip Technology Incorporated's semiconductor devices neither contain nor are manufactured with Class I or Class II Ozone Depleting Chemicals ("ODCs"). For purposes of this document "ODCs" are those substances listed in 40CFR82A App A, and 40CFR82A App B, July 1, 2008.

### ***Brominated Flame Retardant Polymers***

Beginning 1 July 2009, Microchip production locations were qualified as Halogen-Free as defined per IEC 61249-2-21:2003: Bromine (Br)  $\leq$  900 and Chlorine (Cl)  $\leq$  900 ppm by homogeneous material weight. With total Bromine (Br) plus Chlorine (Cl) content  $\leq$  1,500 ppm by homogeneous material weight. Additionally, Antimony Trioxide (Sb<sub>2</sub>O<sub>3</sub>) is less than 1,000 ppm.

Prior to July 2009, Microchip's semiconductor devices may have contained Antimony Trioxide, [Sb<sub>2</sub>O<sub>3</sub>] (CAS # 1309-64-4) and one of two brominated (Br/B08) phenolic/epoxy polymers: CAS # 68541-56-0 or CAS # 40039-93-8 used in the flame retardant system of the molding compounds. Neither of these brominated phenolic/epoxy polymers are regulated by European Union's REACH Directive. Microchip's semiconductor devices do not contain pentaBDE or octaBDE, two brominated flame retardants regulated by European Union Directive 2003/11/EC (6 February 2003).

Many of the mold compounds used by Microchip or its sub-contract assembly houses contained one of two brominated phenolic/epoxy polymers: CAS # 68541-56-0 or CAS # 40039-93-8. Neither of these brominated phenolic/epoxy polymers are regulated by European Union Directive REACH Directive. Microchip's semiconductor devices **do not** contain pentaBDE or octaBDE, two



brominated flame retardants regulated by European Union Directive 2003/11/EC (6 February 2003).

### ***Substances of Concern***

Microchip's semiconductor products may contain Nickel (Ni) in one or more of three applications:

- Nickel is one of the three plating materials used on the pins of the semiconductor, hence, the term Nickel (Ni) / Palladium (Pd) / Gold (Au) pin finish. The plating order is determined by the physical properties (adhesiveness) between each substance; Copper to Nickel to Palladium to Gold. Gold is the outer most substance, forming a shield around the Nickel and protecting against skin contact;
- Nickel is an alloying element in three lead frame alloys used by Microchip – C194, C7025, and A42; and
- Nickel may be impurity in the matte tin plating.

Each occurrence is compliant with EU Directive 94/27/EC. Please consult the specific Material Content Declaration (MCD) for the estimated material content value.

The mold compounds used by Microchip and its sub-contract assembly houses to assemble Microchip's semiconductor devices **do not** contain inorganic particulate red phosphorous. Rather, prior to July 2009, diantimony trioxide was the primary inorganic flame retardant material in most mold compounds; one unique mold compound used a trade secret "metal hydroxide" instead of diantimony trioxide. Certain mold compounds **do not** contain an inorganic flame retardant.

### ***Absence of Chemical Substances***

If a chemical substance is absent from the spreadsheet reflecting its Bill of Materials at specific assembly site, its absence from the chemical substance list(s) means:

- The chemical substance is **NOT** an intentional ingredient in the semiconductor device; and
- To the best of Microchip's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

### ***Recyclate Information (IMDS Format)***

Amount of contained recyclate – as released?	0%
Amount of contained recyclate – as measured?	0%
Amount of contained recyclate – post industrial recyclate?	0 g / 0%
Amount of contained recyclate – post consumer recyclate?	0 g / 0%

### ***Joint Industry Guide No. JIG-101 Ed. 4.0***

Microchip semiconductor products meet the requirements of the Consumer Electronics Association (CEA), DIGITALEUROPE, and Japanese Green



Procurement Survey Standardization Initiative (JGPSSI) Joint Industry Guide - Material Composition Declaration for Electro technical Products - JIG-101 Ed. 4.0. This guide represents industry-wide consensus on the relevant materials and substances that shall be disclosed by suppliers when those materials and substances are present in products.

***Implementation of copper wire bond***

(PdCu) Palladium Copper Wire provides superior electrical performance over (Au) Gold Wire. Using PdCu wire provides a hedge on rising prices that can affect the supply of gold available for manufacturing. Therefore, PdCu wire helps ensure a steady supply of components that can support your ongoing business needs. It is Microchip's intent to convert all applicable products within the next 18 to 24 month. This switching of wire bond materials does not change the environmental compliance or reporting category of any product. To facilitate the ease of material content reporting to both our suppliers and customers during this transition, all transitioned Palladium Copper Wire packages the content is group together.

***Microchip Technology Incorporated's General Statement of Warranty***

Microchip accepts no duty to notify any user of updates or changes. Further, the exclusive, limited product warranties provided by Microchip Technology Inc. and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgements, and invoices. Microchip shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on this document. It is the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and any reasonable or foreseeable uses of the components or systems used or purchased.



Semiconductor Device Type: EB 03 (Lead) DDPAK (F4)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Fused Silica	60676-86-0	Mold Compound	34.505	478.823	345,048	544.12	Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	1.274	17.684	12,743		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	1.176	16.324	11,763		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.764	24.485	17,645		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.098	1.360	980		Carbon Black	1333-86-4	0.25	
Undeclared	Trade Secret	Mold Compound	0.392	5.441	3,921		Undeclared	Trade Secret	1.00	
			<b>Total</b>				<b>100.00</b>			
Copper	7440-50-8	Lead Frame	58.494	811.716	584,936	828.87	Copper	7440-50-8	97.93	
Tin	7440-31-5	Lead Frame	0.099	1.368	986		Tin	7440-31-5	0.17	
Silver	7440-22-4	Lead Frame	1.138	15.790	11,379		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.086	1.198	864		<b>Total</b>			<b>100.00</b>
Proprietary Resin	Trade Secret	Die Attach	0.020	0.282	204	1.53	Proprietary Resin	Trade Secret	79	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.046	33		Proprietary Curing agent & Hardener	Trade Secret	19	
Silicon	7440-21-3	Chip (Die)	0.270	3.747	2,700		<b>Total</b>			<b>100.00</b>
Gold	7440-57-5	Wire Bond	0.070	0.971	700		<b>Total</b>			<b>100.00</b>
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.610	8.465	6,100					
<b>TOTALS:</b>			<b>100.000</b>	<b>1,387.700</b>	<b>1,000,000</b>					
<b>1.3877 g Total Mass</b>										
<p>This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.</p> <p>Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a></p> <p>The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.</p> <p>Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.</p> <p>Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.</p> <p>Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.</p>										
						3.75	Total (mg)	Chip (Die)	% of Total Weight	0.27
						Silicon		7440-21-3	100	
						<b>Total</b>			<b>100.00</b>	
						0.97	(mg) Total	Wire Bond	% of Total Weight	0.07
						Gold		7440-57-5	100	
						<b>Total</b>			<b>100.00</b>	
						8.46	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.61
								7440-31-5	100.00	
						<b>Total</b>			<b>100.00</b>	
						<b>1,387.700</b>				<b>100.000</b>



Semiconductor Device Type: ET 05 (Lead) DDPAK (J7)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3															
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	526.92	(mg) Total	Mold Compound	% of Total Weight	26.56															
Fused Silica	60676-86-0	Mold Compound	23.373	463.693	233,728		Fused Silica	60676-86-0	88.00																
Epoxy Resin 1	Trade Secret	Mold Compound	0.863	17.125	8,632		Epoxy Resin 1	Trade Secret	3.25																
Epoxy Resin 2	Trade Secret	Mold Compound	0.797	15.808	7,968		Epoxy Resin 2	Trade Secret	3.00																
Phenol Resin	Trade Secret	Mold Compound	1.195	23.712	11,952		Phenol Resin	Trade Secret	4.50																
Carbon Black	1333-86-4	Mold Compound	0.066	1.317	664		Carbon Black	1333-86-4	0.25																
Undeclared	Trade Secret	Mold Compound	0.266	5.269	2,656		Undeclared	Trade Secret	1.00																
Copper	7440-50-8	Lead Frame	70.627	1401.171	706,271		<b>Total</b>			<b>100.00</b>															
Tin	7440-31-5	Lead Frame	0.119	2.361	1,190		<b>1430.79</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>72.12</b>														
Silver	7440-22-4	Lead Frame	1.374	27.257	13,739		Copper	7440-50-8	97.93																
Silver (Ag)	7440-22-4	Die Attach	0.071	1.402	707		Tin	7440-31-5	0.17																
Proprietary Resin	Trade Secret	Die Attach	0.017	0.330	167		Silver	7440-22-4	1.91																
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.054	27		<b>Total</b>			<b>100.00</b>															
Silicon	7440-21-3	Chip (Die)	0.620	12.300	6,200		<b>1.79</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.09</b>														
Gold	7440-57-5	Wire Bond	0.040	0.794	400		Silver (Ag)	7440-22-4	79																
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308	5,700		Proprietary Resin	Trade Secret	19																
<b>TOTALS:</b>			<b>100.000</b>	<b>1,983.900</b>	<b>1,000,000</b>		Proprietary Curing agent & Hardener	Trade Secret	3																
<b>1.9839 g Total Mass</b>																									
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						<table border="1"> <thead> <tr> <th>12.30</th> <th>Total (mg)</th> <th>Chip (Die)</th> <th>% of Total Weight</th> <th>0.62</th> </tr> </thead> <tbody> <tr> <td></td> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> <td></td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </tbody> </table>					12.30	Total (mg)	Chip (Die)	% of Total Weight	0.62		Doped Silicon	7440-21-3	100		<b>Total</b>			<b>100.00</b>	
12.30	Total (mg)	Chip (Die)	% of Total Weight	0.62																					
	Doped Silicon	7440-21-3	100																						
<b>Total</b>			<b>100.00</b>																						
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.						<table border="1"> <thead> <tr> <th>0.79</th> <th>(mg) Total</th> <th>Wire Bond</th> <th>% of Total Weight</th> <th>0.04</th> </tr> </thead> <tbody> <tr> <td></td> <td>JGPSSI (D02)</td> <td>7440-57-5</td> <td>100</td> <td></td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </tbody> </table>					0.79	(mg) Total	Wire Bond	% of Total Weight	0.04		JGPSSI (D02)	7440-57-5	100		<b>Total</b>			<b>100.00</b>	
0.79	(mg) Total	Wire Bond	% of Total Weight	0.04																					
	JGPSSI (D02)	7440-57-5	100																						
<b>Total</b>			<b>100.00</b>																						
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11.31	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.57																					
	Tin	7440-31-5	100.00																						
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>						<table border="1"> <thead> <tr> <th>1,983.900</th> <th colspan="2"></th> <th>100.000</th> <th>100.000</th> </tr> </thead> <tbody> <tr> <td colspan="5" style="text-align: center;"><b>Total</b></td> </tr> </tbody> </table>					1,983.900			100.000	100.000	<b>Total</b>									
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Semiconductor Device Type: MC 08 (Lead) DFN 2x3 mm (B3 / BY)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
							7.49	(mg) Total	Mold Compound	% of Total Weight	48
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	Epoxy Resin (NLP # 500-033-5)					
Silica, fused	60676-86-0	Mold Compound	43.200	6.739	432,000	Silica, fused	60676-86-0	90.00			
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.328	0.363	23,280	Trade Secret	Trade Secret	4.85			
Phenolic Resin	Trade Secret	Mold Compound	2.328	0.363	23,280	Phenolic Resin	Trade Secret	4.85			
Carbon Black	1333-86-4	Mold Compound	0.144	0.022	1,440	Carbon Black	1333-86-4	0.30			
Copper	7440-50-8	Lead Frame	44.421	6.930	444,212	<b>Total</b>			<b>100.00</b>		
Tin	7440-31-5	Lead Frame	0.114	0.018	1,140	7.11	(mg) Total	Lead Frame	% of Total Weight	45.6	
Silver	7440-22-4	Lead Frame	0.869	0.136	8,687	Copper	7440-50-8	97.42			
Zinc	7440-66-6	Lead Frame	0.082	0.013	821	Tin	7440-31-5	0.25			
Chromium	7440-47-3	Lead Frame	0.114	0.018	1,140	Silver	7440-22-4	1.91			
Silver	7440-22-4	Die Attach	0.187	0.029	1,872	Zinc	7440-66-6	0.18			
Acrylate resins Proprietary	Trade Secret	Die Attach	0.043	0.007	432	Chromium	7440-47-3	0.25			
Treated silica	Trade Secret	Die Attach	0.005	0.001	48	<b>Total</b>			<b>100.00</b>		
Heterocyclic organic compound	Trade Secret	Die Attach	0.005	0.001	48	0.04	(mg) Total	Die Attach	% of Total Weight	0.24	
Silicon	7440-21-3	Chip (Die)	1.640	0.256	16,400	Silver	7440-22-4	78			
Gold	7440-57-5	Wire Bond	0.400	0.062	4,000	Acrylate resins Proprietary	Trade Secret	18			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.120	0.643	41,200	Treated silica	Trade Secret	2			
<b>TOTALS:</b>			<b>100.000</b>	<b>15.600</b>	<b>1,000,000</b>	Heterocyclic organic compound	Trade Secret	2			
<b>0.0156 g Total Mass</b>											
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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							0.26	Total (mg)	Chip (Die)	% of Total Weight	1.64
							Doped Silicon		7440-21-3	100	
							<b>Total</b>			<b>100.00</b>	
							0.06	(mg) Total	Wire Bond	% of Total Weight	0.4
							Gold		7440-57-5	100	
							<b>Total</b>			<b>100.00</b>	
							0.64	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.12
							Tin		7440-31-5	100.00	
							<b>Total</b>			<b>100.00</b>	
							15.600				100.000



Semiconductor Device Type: MF 08 (Lead) DFN 3x3 mm (A7 / AJ)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	12.20	(mg) Total	Mold Compound	% of Total Weight	51.24	
Silica, fused	60676-86-0	Mold Compound	46.116	10.976	461,160	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.485	0.591	24,851		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.485	0.591	24,851		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.154	0.037	1,537		Carbon Black	1333-86-4	0.30		
						<b>Total</b>			<b>100.00</b>		
Copper	7440-50-8	Lead Frame	38.576	9.181	385,763	9.42	<b>(mg) Total</b>		<b>Lead Frame</b>	<b>% of Total Weight</b>	39.6
Tin	7440-31-5	Lead Frame	0.099	0.024	990		Copper	7440-50-8	97.42		
Silver	7440-22-4	Lead Frame	0.754	0.180	7,544		Tin	7440-31-5	0.25		
Zinc	7440-66-6	Lead Frame	0.071	0.017	713		Silver	7440-22-4	1.91		
Chromium	7440-47-3	Lead Frame	0.099	0.024	990		Zinc	7440-66-6	0.18		
Silver	7440-22-4	Die Attach	0.733	0.175	7,332		Chromium	7440-47-3	0.25		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.169	0.040	1,692	<b>Total</b>			<b>100.00</b>		
Treated silica	Trade Secret	Die Attach	0.019	0.004	188	0.22	<b>(mg) Total</b>		<b>Die Attach</b>	<b>% of Total Weight</b>	0.94
Heterocyclic organic compound	Trade Secret	Die Attach	0.019	0.004	188		Silver	7440-22-4	78		
Silicon	7440-21-3	Chip (Die)	3.610	0.859	36,100		Acrylate resins Proprietary	Trade Secret	18		
Gold	7440-57-5	Wire Bond	1.470	0.350	14,700		Treated silica	Trade Secret	2		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.140	0.747	31,400	<b>Total</b>			<b>100.00</b>		
<b>0.0238 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>23.800</b>	<b>1,000,000</b>	<b>(mg) Total</b>		<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>3.61</b>
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.											
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.											
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>											
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.											
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						0.75	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.14	
							Tin	7440-31-5	100.00		
						<b>Total</b>			<b>100.00</b>		
						<b>23.800</b>				<b>100.000</b>	



Semiconductor Device Type: MD 08 (Lead) DFN 4x4 (M8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	19.20 (mg) Total		Mold Compound	% of Total Weight	42.76
Silica, fused	60676-86-0	Mold Compound	38.484	17.279	384.840	Epoxy Resin (NLP # 500-033-5)		Silica, fused	60676-86-0	90.00
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.074	0.931	20.739			Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85
Phenolic Resin	Trade Secret	Mold Compound	2.074	0.931	20.739			Phenolic Resin	Trade Secret	4.85
Carbon Black	1333-86-4	Mold Compound	0.128	0.058	1.283			Carbon Black	1333-86-4	0.30
Copper	7440-50-8	Lead Frame	44.970	20.191	449.695			<b>Total</b>		<b>100.00</b>
Iron	7439-89-6	Lead Frame	1.106	0.497	11.061	<b>21.13 (mg) Total</b>		<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>47.07</b>
Silver	7440-22-4	Lead Frame	0.897	0.403	8.967	Copper		Copper	7440-50-8	95.54
Zinc	7440-66-6	Lead Frame	0.059	0.026	588			Iron	7439-89-6	2.35
Phosphorous	7723-14-0	Lead Frame	0.039	0.017	388			Silver	7440-22-4	1.91
Silver	7440-22-4	Die Attach	0.913	0.410	9.126			Zinc	7440-66-6	0.13
Acrylate resins Proprietary	Trade Secret	Die Attach	0.211	0.095	2.106			Phosphorous	7723-14-0	0.08
Treated silica	Trade Secret	Die Attach	0.023	0.011	234			<b>Total</b>		<b>100.00</b>
Heterocyclic organic compound	Trade Secret	Die Attach	0.023	0.011	234	<b>0.53 (mg) Total</b>		<b>Die Attach</b>	<b>% of Total Weight</b>	<b>1.17</b>
Silicon	7440-21-3	Chip (Die)	5.470	2.456	54.700	Acrylate resins Proprietary		Silver	7440-22-4	78
Doped Gold	7440-57-5	Wire Bond	0.320	0.144	3.200			Acrylate resins Proprietary	Trade Secret	18
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.210	1.441	32.100			Treated silica	Trade Secret	2
			<b>TOTALS:</b>	<b>100.000</b>	<b>44.900</b>			<b>1,000,000</b>	Heterocyclic organic compound	Trade Secret
			<b>0.0449 g Total Mass</b>					<b>Total</b>		<b>100.00</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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		<b>Total</b>		<b>100.00</b>
<b>2.46 (mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>		<b>5.47</b>
Doped Silicon		7440-21-3	100	
		<b>Total</b>		<b>100.00</b>
<b>0.14 (mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>		<b>0.32</b>
Doped Gold		7440-57-5	100	
		<b>Total</b>		<b>100.00</b>
<b>1.44 (mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>		<b>3.21</b>
Tin		7440-31-5	100.00	
		<b>Total</b>		<b>100.00</b>
<b>44.900</b>				<b>100.000</b>







Semiconductor Device Type: MF 10 (Lead) DFN 3x3 mm (E2 / EJ)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, fused	60676-86-0	Mold Compound	72.864	17.414	728,640					
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.927	0.938	39,266					
Phenolic Resin	Trade Secret	Mold Compound	3.927	0.938	39,266					
Carbon Black	1333-86-4	Mold Compound	0.243	0.058	2,429					
Copper	7440-50-8	Lead Frame	3.544	0.847	35,444					
Iron	7439-89-6	Lead Frame	0.087	0.021	872					
Silver	7440-22-4	Lead Frame	0.071	0.017	707					
Zinc	7440-66-6	Lead Frame	0.005	0.001	46					
Phosphorous	7723-14-0	Lead Frame	0.003	0.001	31					
Silver	7440-22-4	Die Attach	0.491	0.117	4,914					
Acrylate resins Proprietary	Trade Secret	Die Attach	0.113	0.027	1,134					
Treated silica	Trade Secret	Die Attach	0.013	0.003	126					
Heterocyclic organic compound	Trade Secret	Die Attach	0.013	0.003	126					
Silicon	7440-21-3	Chip (Die)	9.260	2.213	92,600					
Gold	7440-57-5	Wire Bond	0.820	0.196	8,200					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.620	1.104	46,200					
<b>TOTALS:</b>			<b>100.000</b>	<b>23.900</b>	<b>1,000,000</b>					
<b>0.0239 g Total Mass</b>										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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						19.35	(mg) Total	Mold Compound	% of Total Weight	80.96
								Silica, fused	60676-86-0	90.00
								Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85
								Phenolic Resin	Trade Secret	4.85
								Carbon Black	1333-86-4	0.30
								<b>Total</b>		<b>100.00</b>
						0.89	(mg) Total	Lead Frame	% of Total Weight	3.71
								Copper	7440-50-8	95.54
								Iron	7439-89-6	2.35
								Silver	7440-22-4	1.91
								Zinc	7440-66-6	0.13
								Phosphorous	7723-14-0	0.08
								<b>Total</b>		<b>100.00</b>
						0.15	(mg) Total	Die Attach	% of Total Weight	0.63
								Silver	7440-22-4	78
								Acrylate resins Proprietary	Trade Secret	18
								Treated silica	Trade Secret	2
								Heterocyclic organic compound	Trade Secret	2
								<b>Total</b>		<b>100.00</b>
						2.21	Total (mg)	Chip (Die)	% of Total Weight	9.26
								Silicon	7440-21-3	100
								<b>Total</b>		<b>100.00</b>
						0.20	(mg) Total	Wire Bond	% of Total Weight	0.82
								Gold	7440-57-5	100
								<b>Total</b>		<b>100.00</b>
						1.10	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.62
								Tin	7440-31-5	100.00
								<b>Total</b>		<b>100.00</b>
						23.900				100.000



Semiconductor Device Type: MF 08 (pin) PDFN 5x6x0.9mm (AS)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, fused	60676-86-0	Mold Compound	48.960	51.271	489,600	56.97 (mg) Total		Mold Compound	% of Total Weight	54.4
Epoxy Resin	500-033-5	Mold Compound	2.638	2.763	26,384			Silica, fused	60676-86-0	90.00
Phenolic Resin	Trade Secret	Mold Compound	2.638	2.763	26,384			Epoxy Resin	500-033-5	4.85
Carbon Black	1333-86-4	Mold Compound	0.163	0.171	1,632			Phenolic Resin	Trade Secret	4.85
Copper	7440-50-8	Lead Frame	16.394	17.168	163,942			Carbon Black	1333-86-4	0.30
Iron	7439-89-6	Lead Frame	0.403	0.422	4,033			<b>Total 100.00</b>		
Silver	7440-22-4	Lead Frame	0.327	0.342	3,269	17.97 (mg) Total		Lead Frame	% of Total Weight	17.16
Zinc	7440-66-6	Lead Frame	0.021	0.022	215			Copper	7440-50-8	95.54
Phosphorous	7723-14-0	Lead Frame	0.014	0.015	142			Iron	7439-89-6	2.35
Copper	7440-50-8	Clip Attachment (92.5/5/2.5 PbSnAg)	14.697	15.391	146,970			Silver	7440-22-4	1.91
Iron	7439-89-6	Clip Attachment (92.5/5/2.5 PbSnAg)	0.354	0.371	3,544			Zinc	7440-66-6	0.13
Zinc	7440-66-6	Clip Attachment (92.5/5/2.5 PbSnAg)	0.018	0.019	181			Phosphorous	7723-14-0	0.08
Phosphorous	7723-14-0	Clip Attachment (92.5/5/2.5 PbSnAg)	0.011	0.011	106			<b>Total 100.00</b>		
Lead	7439-92-1	Clip Attachment (92.5/5/2.5 PbSnAg)	6.346	6.645	63,455	15.79 (mg) Total		Clip	% of Total Weight	15.08
Silver	7440-22-4	Clip Attachment (92.5/5/2.5 PbSnAg)	0.343	0.359	3,430			Copper	7440-50-8	97.46
Tin	7440-31-5	Clip Attachment (92.5/5/2.5 PbSnAg)	0.172	0.180	1,715			Iron	7439-89-6	2.35
Silicon	7440-21-3	Chip (Die)	3.290	3.445	32,900			Zinc	7440-66-6	0.12
Doped Gold	7440-57-5	Wire Bond	0.830	0.869	8,300			Phosphorous	7723-14-0	0.07
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.380	2.492	23,800			<b>Total 100.00</b>		
<b>TOTALS:</b>			<b>100.000</b>	<b>104.720</b>	<b>1,000,000</b>					
<b>0.1047 g Total Mass</b>										

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive) uses EU-RoHS application exemption 7(a): Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead.

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56.97 (mg) Total		Mold Compound	% of Total Weight	54.4
		Silica, fused	60676-86-0	90.00
		Epoxy Resin	500-033-5	4.85
		Phenolic Resin	Trade Secret	4.85
		Carbon Black	1333-86-4	0.30
<b>Total 100.00</b>				
17.97 (mg) Total		Lead Frame	% of Total Weight	17.16
		Copper	7440-50-8	95.54
		Iron	7439-89-6	2.35
		Silver	7440-22-4	1.91
		Zinc	7440-66-6	0.13
		Phosphorous	7723-14-0	0.08
<b>Total 100.00</b>				
15.79 (mg) Total		Clip	% of Total Weight	15.08
		Copper	7440-50-8	97.46
		Iron	7439-89-6	2.35
		Zinc	7440-66-6	0.12
		Phosphorous	7723-14-0	0.07
<b>Total 100.00</b>				
7.18 (mg) Total		Clip Attachment (92.5/5/2.5 PbSnAg)	% of Total Weight	6.86
High temp solder		Lead	7439-92-1	92.50
		Silver	7440-22-4	5.00
		Tin	7440-31-5	2.50
<b>Total 100.00</b>				
3.45 (mg) Total		Chip (Die)	% of Total Weight	3.29
		Doped Silicon	7440-21-3	100
<b>Total 100.00</b>				
0.87 (mg) Total		Wire Bond	% of Total Weight	0.83
		Doped Gold	7440-57-5	100.00
<b>Total 100.00</b>				
2.49 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.38
		Tin	7440-31-5	100.00
<b>Total 100.00</b>				

104.720

100.000



Semiconductor Device Type: QAE 8 (Lead) TDFN-S 6x5x0.8mm (U3)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>38.82</b>	<b>(mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>52.6</b>	
Silica, fused	60676-86-0	Mold Compound	47.340	34.937	473,400	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.551	1.883	25,511		Trade Secret	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.551	1.883	25,511		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.158	0.116	1,578		Carbon Black	1333-86-4	0.30		
			<b>Total</b>				<b>100.00</b>				
Copper	7440-50-8	Lead Frame	38.215	28.203	382,150	<b>29.52</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>40</b>	
Iron	7439-89-6	Lead Frame	0.940	0.694	9,400	Copper	7440-50-8	95.54			
Silver	7440-22-4	Lead Frame	0.762	0.562	7,620	Iron	7439-89-6	2.35			
Zinc	7440-66-6	Lead Frame	0.050	0.037	500	Silver	7440-22-4	1.91			
Phosphorous	7723-14-0	Lead Frame	0.033	0.024	330	Zinc	7440-66-6	0.13			
Silver (Ag)	7440-22-4	Die Attach	0.704	0.520	7,040	Phosphorous	7723-14-0	0.08			
Epoxy Resin	Trade Secret	Die Attach	0.150	0.110	1,496	<b>Total</b>			<b>100.00</b>		
Copper ( Cu )	7440-50-8	Die Attach	0.026	0.019	264	<b>0.65</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.88</b>	
Silicon	7440-21-3	Chip (Die)	5.140	3.793	51,400	Silver (Ag)	7440-22-4	80			
Gold	7440-57-5	Wire Bond	0.270	0.199	2,700	Epoxy Resin	Trade Secret	17			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.110	0.819	11,100	Copper ( Cu )	7440-50-8	3			
<b>TOTALS:</b>			<b>100.000</b>	<b>73.800</b>	<b>1,000,000</b>	<b>Total</b>			<b>100.00</b>		
<b>0.0738 g Total Mass</b>											
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.											
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The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.											
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							<b>3.79</b>	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>5.14</b>
								Doped Silicon	7440-21-3	100	
							<b>Total</b>			<b>100.00</b>	
							<b>0.20</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.27</b>
								Doped Gold	7440-57-5	100	
							<b>Total</b>			<b>100.00</b>	
							<b>0.82</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.11</b>
								Tin	7440-31-5	100.00	
							<b>Total</b>			<b>100.00</b>	
							<b>73.800</b>				<b>100.000</b>



Semiconductor Device Type: MNY 08 (Lead) TDFN 2x3x0.5mm (5Q)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total		Mold Compound	% of Total Weight
Silica, vitreous (or fused)	60676-86-0	Mold Compound	50.975	7.136	509,745	8.40		60676-86-0	85.00
Epoxy Resin	Trade Secret	Mold Compound	5.217	0.730	52,174			Trade Secret	8.70
Phenolic Resin	Trade Secret	Mold Compound	3.598	0.504	35,982			Trade Secret	6.00
Carbon Black	1333-86-4	Mold Compound	0.180	0.025	1,799			1333-86-4	0.30
Copper	7440-50-8	Lead Frame	32.712	4.580	327,123				
Iron	7439-89-6	Lead Frame	0.773	0.108	7,733				
Phosphorous	7723-14-0	Lead Frame	0.084	0.012	841	4.71		7440-50-8	97.30
Zinc (Metal)	7440-44-0	Lead Frame	0.050	0.007	504			7439-89-6	2.30
Silver	7440-22-4	Die Attach	0.936	0.131	9,360			7723-14-0	0.25
Acrylate resins Proprietary	Trade Secret	Die Attach	0.216	0.030	2,160			7440-44-0	0.15
Treated silica	Trade Secret	Die Attach	0.024	0.003	240				
Heterocyclic organic compound	Trade Secret	Die Attach	0.024	0.003	240	0.17			
Silicon	7440-21-3	Chip (Die)	4.010	0.561	40,100				
Gold	7440-57-5	Wire Bond	0.770	0.108	7,700				
Nickel	7440-02-0	Plating on external leads (pins)	0.412	0.058	4,116				
Palladium	7440-05-03	Plating on external leads (pins)	0.014	0.002	139				
Gold	7440-57-5	Plating on external leads (pins)	0.004	0.001	45				
<b>TOTALS:</b>			<b>100.000</b>	<b>14.000</b>	<b>1,000,000</b>				

**0.0140 g Total Mass**

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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(mg) Total		Mold Compound	% of Total Weight	Total	
8.40		60676-86-0	85.00	100.00	
		Trade Secret	8.70		
		Trade Secret	6.00		
		1333-86-4	0.30		
		<b>Total</b>			<b>100.00</b>
(mg) Total		Lead Frame	% of Total Weight	Total	
4.71		7440-50-8	97.30	33.62	
		7439-89-6	2.30		
		7723-14-0	0.25		
		7440-44-0	0.15		
		<b>Total</b>			<b>100.00</b>
(mg) Total		Die Attach	% of Total Weight	Total	
0.17				1.2	
		7440-22-4	78		
		Trade Secret	18		
		Trade Secret	2		
		Trade Secret	2		
		<b>Total</b>			<b>100.00</b>
Total (mg)		Chip (Die)	% of Total Weight	Total	
0.56		7440-21-3	100	4.01	
		<b>Total</b>			<b>100.00</b>
(mg) Total		Wire Bond	% of Total Weight	Total	
0.11				0.77	
		7440-57-5	100		
		<b>Total</b>			<b>100.00</b>
(mg) Total		Plating on external leads (pins)	% of Total Weight	Total	
0.06				0.43	
		7440-02-0	95.73		
		7440-05-03	3.23		
		7440-57-5	1.04		
		<b>Total</b>			<b>100.00</b>
<b>14.000</b>		<b>100.000</b>			



Semiconductor Device Type: Q2AE 08 (Lead) TDFN-S 6x8x0.8mm (S9)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	52.55	(mg) Total	Mold Compound	% of Total Weight	37.14	
Fused Silica	60676-86-0	Mold Compound	32.869	46.509	328,689		Fused Silica	60676-86-0	88.50		
Epoxy Resin 1	Trade Secret	Mold Compound	2.414	3.416	24,141		Epoxy Resin	Trade Secret	6.50		
Phenol Resin	Trade Secret	Mold Compound	1.764	2.496	17,642		Phenol Resin	Trade Secret	4.75		
Carbon Black	1333-86-4	Mold Compound	0.093	0.131	929		Carbon Black	1333-86-4	0.25		
Copper	7440-50-8	Lead Frame	47.490	67.199	474,904		<b>Total 100.00</b>				
Silver	7440-22-4	Lead Frame	3.287	4.651	32,867	73.82	(mg) Total	Lead Frame	% of Total Weight	52.17	
Iron	7439-89-6	Lead Frame	1.143	1.617	11,425		Copper	7440-50-8	91.03		
Zinc	7440-66-6	Lead Frame	0.177	0.251	1,774		Silver	7440-22-4	6.30		
Phosphorus	7723-14-0	Lead Frame	0.073	0.103	730		Iron	7439-89-6	2.19		
Silver	7440-22-4	Die Attach	0.963	1.362	9,625		Zinc	7440-66-6	0.34		
Acrylic Resin	Trade secret	Die Attach	0.106	0.150	1,063		Phosphorus	7723-14-0	0.14		
Polybutadiene derivative & copolymer	Trade secret	Die Attach	0.081	0.115	813		<b>Total 100.00</b>				
Acrylate	Trade secret	Die Attach	0.069	0.097	688	1.77	(mg) Total	Die Attach	% of Total Weight	1.25	
Epoxy Resin 2	Trade secret	Die Attach	0.031	0.044	313		Silver	7440-22-4	77.00		
Silicon	7440-21-3	Chip (Die)	7.800	11.037	78,000		Acrylic Resin	Trade secret	8.50		
Gold	7440-57-5	Wire Bond	0.040	0.057	400		Polybutadiene derivative & copolymer	Trade secret	6.50		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.600	2.264	16,000		Acrylate	Trade secret	5.50		
<b>0.1415 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>141.500</b>	<b>1,000,000</b>	<b>Total 100.00</b>				
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							11.04	Total (mg)	Chip (Die)	% of Total Weight	7.8
								Doped Silicon	7440-21-3	100	
							<b>Total 100.00</b>				
							0.06	(mg) Total	Wire Bond	% of Total Weight	0.04
								Doped Gold	7440-57-5	100	
							<b>Total 100.00</b>				
							2.26	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.6
								Tin	7440-31-5	100.00	
							<b>Total 100.00</b>				
							141.500				100.000





**Semiconductor Device Type: MN / HC / LC 10 (Lead) TDFN 3x3x0.8mm (QA)**

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	51.000	10.710	510,000
Epoxy Resin	Trade Secret	Mold Compound	5.220	1.096	52,200
Phenolic Resin	Trade Secret	Mold Compound	3.600	0.756	36,000
Carbon Black	1333-86-4	Mold Compound	0.180	0.038	1,800
Copper	7440-50-8	Lead Frame	30.572	6.420	305,720
Iron	7439-89-6	Lead Frame	0.752	0.158	7,520
Silver	7440-22-4	Lead Frame	0.610	0.128	6,096
Zinc	7440-66-6	Lead Frame	0.040	0.008	400
Phosphorous	7723-14-0	Lead Frame	0.026	0.006	264
Silver	7440-22-4	Die Attach	0.059	0.012	590
Epoxy Resin	9003-36-5	Die Attach	0.015	0.003	150
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.005	0.001	50
Phenolic hardener	92-88-6	Die Attach	0.000	0.000	2
Butyl cellosolve acetate	112-07-2	Die Attach	0.001	0.000	6
Silicon	7440-21-3	Chip (Die)	4.820	1.012	48,200
Doped Gold	7440-57-5	Wire Bond	0.100	0.021	1,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	0.630	30,000
<b>TOTALS:</b>			<b>100.000</b>	<b>21.000</b>	<b>1,000,000</b>

**0.0210 g Total Mass**

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Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
12.60	(mg) Total	Mold Compound	% of Total Weight	60.00		
		Silica, vitreous (or fused)	85.00			
		Epoxy Resin	8.70			
		Phenolic Resin	6.00			
		Carbon Black	0.30			
			<b>Total</b>	<b>100.00</b>		
6.72	(mg) Total	Lead Frame	% of Total Weight	32.00		
		Copper	95.54			
		Iron	2.35			
		Silver	1.91			
		Zinc	0.13			
		Phosphorous	0.08			
			<b>Total</b>	<b>100.00</b>		
0.02	(mg) Total	Die Attach	% of Total Weight	0.08		
		Silver	73.80			
		Epoxy Resin	18.80			
		t-Butyl phenyl glycidyl ether	6.30			
		Phenolic hardener	0.30			
		Butyl cellosolve acetate	1			
			<b>Total</b>	<b>100.00</b>		
1.01	(mg) Total	Chip (Die)	% of Total Weight	4.82		
		Doped Silicon	100			
			<b>Total</b>	<b>100.00</b>		
0.02	(mg) Total	Wire Bond	% of Total Weight	0.10		
		Doped Gold	100.00			
			<b>Total</b>	<b>100.00</b>		
0.63	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.00		
		Tin	100.00			
			<b>Total</b>	<b>100.00</b>		
		<b>21.000</b>				<b>100.000</b>





Semiconductor Device Type: MUY 08 (Lead) UDFN 2x3x0.5mm (6Q)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	5.37 (mg) Total	Mold Compound	% of Total Weight	67.95	
Silica, fused	60676-86-0	Mold Compound	61.155	4.831	611,550	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.296	0.260	32,956		Trade Secret	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.296	0.260	32,956		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.204	0.016	2,039		Carbon Black	1333-86-4	0.30	
						<b>Total</b>			<b>100.00</b>	
Copper	7440-50-8	Lead Frame	20.779	1.642	207,786	<b>1.69 (mg) Total</b>		<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>21.33</b>
Tin	7440-31-5	Lead Frame	0.053	0.004	533	Copper	7440-50-8	97.42		
Silver	7440-22-4	Lead Frame	0.406	0.032	4,063	Tin	7440-31-5	0.25		
Zinc	7440-66-6	Lead Frame	0.038	0.003	384	Silver	7440-22-4	1.91		
Chromium	7440-47-3	Lead Frame	0.053	0.004	533	Zinc	7440-66-6	0.18		
Silver	7440-22-4	Die Attach	1.911	0.151	19,110	Chromium	7440-47-3	0.25		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.441	0.035	4,410	<b>Total</b>			<b>100.00</b>	
Treated silica	Trade Secret	Die Attach	0.049	0.004	490	<b>0.19 (mg) Total</b>		<b>Die Attach</b>	<b>% of Total Weight</b>	<b>2.45</b>
Heterocyclic organic compound	Trade Secret	Die Attach	0.049	0.004	490	Silver	7440-22-4	78		
Silicon	7440-21-3	Chip (Die)	7.350	0.581	73,500	Acrylate resins Proprietary	Trade Secret	18		
Gold	7440-57-5	Wire Bond	0.750	0.059	7,500	Treated silica	Trade Secret	2		
Nickel	7440-02-0	Plating on external leads (pins)	0.163	0.013	1,627	Heterocyclic organic compound	Trade Secret	2		
Palladium	7440-05-03	Plating on external leads (pins)	0.005	0.000	55	<b>Total</b>			<b>100.00</b>	
JGPSSI (D02) (Gold)	7440-57-5	Plating on external leads (pins)	0.002	0.000	18	<b>0.58 Total (mg)</b>		<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.35</b>
<b>TOTALS:</b>						<b>100.000</b>	<b>7.900</b>	<b>1,000,000</b>		
<b>0.0079 g Total Mass</b>										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a>										
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						<b>0.06 (mg) Total</b>		<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.75</b>
						Doped Silicon		7440-21-3	100	
						<b>Total</b>			<b>100.00</b>	
						<b>0.01 (mg) Total</b>		<b>Plating on external leads (pins)</b>	<b>% of Total Weight</b>	<b>0.17</b>
						Nickel		7440-02-0	95.73	
						Palladium		7440-05-03	3.23	
						Gold		7440-57-5	1.04	
						<b>Total</b>			<b>100.00</b>	
						7.90				100.00



Semiconductor Device Type: PH 144 (Lead) LQFP 20x20x1.4mm (H8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total		Mold Compound	% of Total Weight	68.23	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.996	373.665	579.955	Silica, vitreous (or fused)		60676-86-0	85.00		
Epoxy Resin	Trade Secret	Mold Compound	5.936	38.246	59.360	Epoxy Resin		Trade Secret	8.70		
Phenolic Resin	Trade Secret	Mold Compound	4.094	26.376	40.938	Phenolic Resin		Trade Secret	6.00		
Carbon Black	1333-86-4	Mold Compound	0.205	1.319	2,047	Carbon Black		1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	26.955	173.669	269,547						
Tin	7440-31-5	Lead Frame	0.069	0.446	692						
Silver	7440-22-4	Lead Frame	0.527	3.396	5,271						
Zinc	7440-66-6	Lead Frame	0.050	0.321	498						
Chromium	7440-47-3	Lead Frame	0.069	0.446	692						
Silver	7440-22-4	Die Attach	0.357	2.300	3,570						
Epoxy resin	Trade Secret	Die Attach	0.102	0.657	1,020						
Aliphatic acid anhydride / TPU-ALET	Trade Secret	Die Attach	0.051	0.329	510						
Silicon	7440-21-3	Chip (Die)	2.090	13.466	20,900						
Gold	7440-57-5	Wire Bond	0.280	1.804	2,800						
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.220	7.860	12,200						
<b>0.6443 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>644.300</b>	<b>1,000,000</b>					
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
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						439.61					
						178.28					
						3.29					
						13.47					
						1.80					
						7.86					
						644.300				100.000	



Semiconductor Device Type: PQ 44 (Lead) MQFP (10x10x2mm) (T8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																														
<b>Basic Substance</b>				<b>CAS Number</b>	<b>"Contained in" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	314.89 (mg) Total	Mold Compound	% of Total Weight	64.87																												
Silica, vitreous (or fused)				60676-86-0	Mold Compound	55.140	267.653	551.395	<table border="1"> <tr> <td>Silica, vitreous (or fused)</td> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>8.70</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>6.00</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Silica, vitreous (or fused)	60676-86-0	85.00	Epoxy Resin	Trade Secret	8.70	Phenolic Resin	Trade Secret	6.00	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>													
Silica, vitreous (or fused)	60676-86-0	85.00																																						
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Carbon Black	1333-86-4	0.30																																						
<b>Total</b>		<b>100.00</b>																																						
Epoxy Resin				Trade Secret	Mold Compound	5.644	27.395	56.437	<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.67</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>0.10</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Copper	7440-50-8	95.24	Nickel	7440-02-0	2.54	Silver	7440-22-4	1.67	Silicon	7440-21-3	0.45	Magnesium	7439-95-4	0.10	<b>Total</b>		<b>100.00</b>										
Copper	7440-50-8	95.24																																						
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<b>Total</b>		<b>100.00</b>																																						
Phenolic Resin				Trade Secret	Mold Compound	3.892	18.893	38.922	<table border="1"> <tr> <td>(mg) Total</td> <td>Lead Frame</td> <td>% of Total Weight</td> <td>28.46</td> </tr> <tr> <td colspan="4">Copper</td> </tr> <tr> <td colspan="4">Nickel</td> </tr> <tr> <td colspan="4">Silver</td> </tr> <tr> <td colspan="4">Silicon</td> </tr> <tr> <td colspan="4">Magnesium</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				(mg) Total	Lead Frame	% of Total Weight	28.46	Copper				Nickel				Silver				Silicon				Magnesium				<b>Total</b>		<b>100.00</b>	
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<b>Total</b>		<b>100.00</b>																																						
Carbon Black				1333-86-4	Mold Compound	0.195	0.945	1.946	<table border="1"> <tr> <td>(mg) Total</td> <td>Die Attach</td> <td>% of Total Weight</td> <td>0.67</td> </tr> <tr> <td colspan="4">Silver (Ag)</td> </tr> <tr> <td colspan="4">ANHYDRIDE</td> </tr> <tr> <td colspan="4">EPOXY RESIN</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				(mg) Total	Die Attach	% of Total Weight	0.67	Silver (Ag)				ANHYDRIDE				EPOXY RESIN				<b>Total</b>		<b>100.00</b>									
(mg) Total	Die Attach	% of Total Weight	0.67																																					
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<b>Total</b>		<b>100.00</b>																																						
Copper				7440-50-8	Lead Frame	27.106	131.573	271.056	<table border="1"> <tr> <td>(mg) Total</td> <td>Chip (Die)</td> <td>% of Total Weight</td> <td>0.67</td> </tr> <tr> <td colspan="4">Silver (Ag)</td> </tr> <tr> <td colspan="4">ANHYDRIDE</td> </tr> <tr> <td colspan="4">EPOXY RESIN</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				(mg) Total	Chip (Die)	% of Total Weight	0.67	Silver (Ag)				ANHYDRIDE				EPOXY RESIN				<b>Total</b>		<b>100.00</b>									
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<b>Total</b>		<b>100.00</b>																																						
Nickel				7440-02-0	Lead Frame	0.723	3.509	7.229	<table border="1"> <tr> <td>Total (mg)</td> <td>Chip (Die)</td> <td>% of Total Weight</td> <td>3.97</td> </tr> <tr> <td colspan="4">Doped Silicon</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				Total (mg)	Chip (Die)	% of Total Weight	3.97	Doped Silicon				<b>Total</b>		<b>100.00</b>																	
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<b>Total</b>		<b>100.00</b>																																						
Silver				7440-22-4	Lead Frame	0.475	2.306	4.750	<table border="1"> <tr> <td>(mg) Total</td> <td>Wire Bond</td> <td>% of Total Weight</td> <td>0.21</td> </tr> <tr> <td colspan="4">Doped Gold</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				(mg) Total	Wire Bond	% of Total Weight	0.21	Doped Gold				<b>Total</b>		<b>100.00</b>																	
(mg) Total	Wire Bond	% of Total Weight	0.21																																					
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<b>Total</b>		<b>100.00</b>																																						
Silicon				7440-21-3	Lead Frame	0.128	0.622	1.281	<table border="1"> <tr> <td>(mg) Total</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 4 hours</td> <td>% of Total Weight</td> <td>1.82</td> </tr> <tr> <td colspan="4">Tin</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 4 hours	% of Total Weight	1.82	Tin				<b>Total</b>		<b>100.00</b>																	
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Tin																																								
<b>Total</b>		<b>100.00</b>																																						
Magnesium				7439-95-4	Lead Frame	0.028	0.138	285	<table border="1"> <tr> <td colspan="4">Total</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				Total				<b>Total</b>		<b>100.00</b>																					
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<b>Total</b>		<b>100.00</b>																																						
Silver (Ag)				7440-22-4	Die Attach	0.556	2.699	5.561	<table border="1"> <tr> <td colspan="4">Total</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				Total				<b>Total</b>		<b>100.00</b>																					
Total																																								
<b>Total</b>		<b>100.00</b>																																						
ANHYDRIDE				Trade Secret	Die Attach	0.060	0.293	603	<table border="1"> <tr> <td colspan="4">Total</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				Total				<b>Total</b>		<b>100.00</b>																					
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<b>Total</b>		<b>100.00</b>																																						
EPOXY RESIN				Trade Secret	Die Attach	0.054	0.260	536	<table border="1"> <tr> <td colspan="4">Total</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				Total				<b>Total</b>		<b>100.00</b>																					
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<b>Total</b>		<b>100.00</b>																																						
Silicon				7440-21-3	Chip (Die)	3.970	19.271	39.700	<table border="1"> <tr> <td colspan="4">Total</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				Total				<b>Total</b>		<b>100.00</b>																					
Total																																								
<b>Total</b>		<b>100.00</b>																																						
Gold				7440-57-5	Wire Bond	0.210	1.019	2.100	<table border="1"> <tr> <td colspan="4">Total</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				Total				<b>Total</b>		<b>100.00</b>																					
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<b>Total</b>		<b>100.00</b>																																						
Tin				7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820	8.834	18.200	<table border="1"> <tr> <td colspan="4">Total</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> <td></td> </tr> </table>				Total				<b>Total</b>		<b>100.00</b>																					
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<b>Total</b>		<b>100.00</b>																																						
<b>TOTALS:</b>						<b>100.000</b>	<b>485.410</b>	<b>1,000,000</b>																																
<b>0.4854 g Total Mass</b>																																								

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Semiconductor Device Type: MS and UA 8 (Lead) MSOP 3x3mm (A3)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous	60676-86-0	Mold Compound	67.830	17.364	678,300	20.43	Silica, vitreous	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.888	1.251	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin	Trade Secret	Mold Compound	4.888	1.251	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.501	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	0.061	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	2.568	100,314		<b>Total 100.00</b>			
Iron	7439-89-6	Lead Frame	0.247	0.063	2,468	2.69	Lead Frame			
Silver	7440-22-4	Lead Frame	0.200	0.051	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.003	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.002	87		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	0.144	5,625		Zinc	7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.027	1,050		Phosphorous	7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.014	563	<b>Total 100.00</b>				
Modified Amine	827-43-0	Die Attach	0.026	0.007	263	0.19	Die Attach			
Silicon	7440-21-3	Chip (Die)	7.500	1.920	75,000		Silver (Ag)	7440-22-4	75	
Doped Gold	7440-57-5	Wire Bond	0.200	0.051	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.320	12,500		Diglycidylether of bisphenol-F	54208-63-8	8	
<b>0.0256 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>25.600</b>	<b>1,000,000</b>	Modified Amine			
							Total			100.00
							1.92	(mg) Total		7.5
								Chip (Die)		
							Doped Silicon		7440-21-3	100
							<b>Total 100.00</b>			
							0.05	(mg) Total		0.2
								Wire Bond		
							Doped Gold		7440-57-5	100
							<b>Total 100.00</b>			
							0.32	(mg) Total		1.25
								Tin		
							Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		7440-31-5	100.00
							<b>Total 100.00</b>			
							25.600			100.000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.

Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.

Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.



Semiconductor Device Type: UN 10 (Lead) MSOP 3x3mm (E3 / EL)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																											
Basic Substance	CAS Number	"Contained in" Sub-Component	% Total Weight	mg/part	ppm	6.66 (mg) Total		Mold Compound	% of Total Weight	28.71																											
Silica, vitreous	60676-86-0	Mold Compound	24.404	5.662	244,035	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>													
Silica, vitreous	60676-86-0	85.00																																			
Epoxy Resin	Trade Secret	6.13																																			
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Carbon Black	1333-86-4	0.30																																			
<b>Total</b>		<b>100.00</b>																																			
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.758	0.408	17,585																																
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	1.758	0.408	17,585																																
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.703	0.163	7,034																																
Carbon Black	1333-86-4	Mold Compound	0.086	0.020	861																																
Copper	7440-50-8	Lead Frame	42.830	9.937	428,299	<table border="1"> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>		<b>Total</b>		<b>100.00</b>																											
<b>Total</b>		<b>100.00</b>																																			
Nickel	7440-02-0	Lead Frame	1.142	0.265	11,422	<table border="1"> <tr><td><b>10.43 (mg) Total</b></td><td><b>Lead Frame</b></td><td><b>% of Total Weight</b></td><td><b>44.97</b></td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>95.24</td><td></td></tr> <tr><td>Nickel</td><td>7440-02-0</td><td>2.54</td><td></td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.67</td><td></td></tr> <tr><td>Silicon</td><td>7440-21-3</td><td>0.45</td><td></td></tr> <tr><td>Magnesium</td><td>7439-95-4</td><td>0.10</td><td></td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>		<b>10.43 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>44.97</b>	Copper	7440-50-8	95.24		Nickel	7440-02-0	2.54		Silver	7440-22-4	1.67		Silicon	7440-21-3	0.45		Magnesium	7439-95-4	0.10		<b>Total</b>		<b>100.00</b>			
<b>10.43 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>44.97</b>																																		
Copper	7440-50-8	95.24																																			
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Magnesium	7439-95-4	0.10																																			
<b>Total</b>		<b>100.00</b>																																			
Silver	7440-22-4	Lead Frame	0.751	0.174	7,505																																
Silicon	7440-21-3	Lead Frame	0.202	0.047	2,024																																
Magnesium	7439-95-4	Lead Frame	0.045	0.010	450																																
Silver	7440-22-4	Die Attach	0.601	0.139	6,006	<table border="1"> <tr><td><b>0.18 (mg) Total</b></td><td><b>Die Attach</b></td><td><b>% of Total Weight</b></td><td><b>0.77</b></td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>78</td><td></td></tr> <tr><td>Acrylate resins Proprietary</td><td>Trade Secret</td><td>18</td><td></td></tr> <tr><td>Treated silica</td><td>Trade Secret</td><td>2</td><td></td></tr> <tr><td>Heterocyclic organic compound</td><td>Trade Secret</td><td>2</td><td></td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>		<b>0.18 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.77</b>	Silver	7440-22-4	78		Acrylate resins Proprietary	Trade Secret	18		Treated silica	Trade Secret	2		Heterocyclic organic compound	Trade Secret	2		<b>Total</b>		<b>100.00</b>							
<b>0.18 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.77</b>																																		
Silver	7440-22-4	78																																			
Acrylate resins Proprietary	Trade Secret	18																																			
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Heterocyclic organic compound	Trade Secret	2																																			
<b>Total</b>		<b>100.00</b>																																			
Acrylate resins Proprietary	Trade Secret	Die Attach	0.139	0.032	1,386																																
Treated silica	Trade Secret	Die Attach	0.015	0.004	154																																
Heterocyclic organic compound	Trade Secret	Die Attach	0.015	0.004	154																																
Silicon	7440-21-3	Chip (Die)	2.800	0.650	28,000	<table border="1"> <tr><td><b>0.65 Total (mg)</b></td><td><b>Chip (Die)</b></td><td><b>% of Total Weight</b></td><td><b>2.8</b></td></tr> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td><td></td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>		<b>0.65 Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>2.8</b>	Doped Silicon	7440-21-3	100		<b>Total</b>		<b>100.00</b>																			
<b>0.65 Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>2.8</b>																																		
Doped Silicon	7440-21-3	100																																			
<b>Total</b>		<b>100.00</b>																																			
Gold	7440-57-5	Wire Bond	0.680	0.158	6,800																																
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	22.070	5.120	220,700	<table border="1"> <tr><td><b>0.16 (mg) Total</b></td><td><b>Wire Bond</b></td><td><b>% of Total Weight</b></td><td><b>0.68</b></td></tr> <tr><td>Doped Gold</td><td>7440-57-5</td><td>100</td><td></td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>		<b>0.16 (mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.68</b>	Doped Gold	7440-57-5	100		<b>Total</b>		<b>100.00</b>																			
<b>0.16 (mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.68</b>																																		
Doped Gold	7440-57-5	100																																			
<b>Total</b>		<b>100.00</b>																																			
<b>0.0232 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>23.200</b>	<b>1,000,000</b>	<table border="1"> <tr><td><b>5.12 (mg) Total</b></td><td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td><td><b>% of Total Weight</b></td><td><b>22.07</b></td></tr> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>		<b>5.12 (mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>22.07</b>	Tin	7440-31-5	100.00		<b>Total</b>		<b>100.00</b>																		
<b>5.12 (mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>22.07</b>																																		
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<b>Total</b>		<b>100.00</b>																																			
							<table border="1"> <tr><td><b>23.200</b></td><td><b>Total</b></td><td><b>100.00</b></td><td><b>100.000</b></td></tr> </table>		<b>23.200</b>	<b>Total</b>	<b>100.00</b>	<b>100.000</b>																									
<b>23.200</b>	<b>Total</b>	<b>100.00</b>	<b>100.000</b>																																		

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

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Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.

Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.



Semiconductor Device Type: P and PA 8 (Lead) PDIP (Small Outline - .300") (C4 / CK)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																															
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	388.39 (mg) Total	Mold Compound	% of Total Weight	79.8																																
Fused Silica	60676-86-0	Mold Compound	57.456	279.638	574.560	<table border="1"> <tr><td>Fused Silica</td><td>60676-86-0</td><td>72.00</td></tr> <tr><td>Metal Hydro Oxide</td><td>Trade Secret</td><td>11.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>7.00</td></tr> <tr><td>Phenol Resin</td><td>Trade Secret</td><td>7.00</td></tr> <tr><td>SiO2</td><td>14808-60-7</td><td>2.50</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.50</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	Fused Silica	60676-86-0	72.00	Metal Hydro Oxide	Trade Secret	11.00	Epoxy Resin	Trade Secret	7.00	Phenol Resin	Trade Secret	7.00	SiO2	14808-60-7	2.50	Carbon Black	1333-86-4	0.50	<b>Total</b>		<b>100.00</b>														
Fused Silica	60676-86-0	72.00																																							
Metal Hydro Oxide	Trade Secret	11.00																																							
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Carbon Black	1333-86-4	0.50																																							
<b>Total</b>		<b>100.00</b>																																							
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	42.723	87.780																																				
Epoxy Resin	Trade Secret	Mold Compound	5.586	27.187	55.860																																				
Phenol Resin	Trade Secret	Mold Compound	5.586	27.187	55.860																																				
SiO2	14808-60-7	Mold Compound	1.995	9.710	19.950																																				
Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3.990																																				
Copper	7440-50-8	Lead Frame	10.031	48.823	100.314	<table border="1"> <tr><td><b>51.10 (mg) Total</b></td><td><b>Lead Frame</b></td><td><b>% of Total Weight</b></td><td><b>10.5</b></td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td><td></td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td><td></td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td><td></td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td><td></td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td><td></td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	<b>51.10 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>	Copper	7440-50-8	95.54		Iron	7439-89-6	2.35		Silver	7440-22-4	1.91		Zinc	7440-66-6	0.13		Phosphorous	7723-14-0	0.08		<b>Total</b>		<b>100.00</b>								
<b>51.10 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>																																						
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<b>Total</b>		<b>100.00</b>																																							
Iron	7439-89-6	Lead Frame	0.247	1.201	2.468																																				
Silver	7440-22-4	Lead Frame	0.200	0.974	2.000																																				
Zinc	7440-66-6	Lead Frame	0.013	0.064	131																																				
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87																																				
Silver	7440-22-4	Die Attach	0.550	2.678	5.502																																				
Epoxy Resin	9003-36-5	Die Attach	0.110	0.535	1,100																																				
Diluent	3101-60-8	Die Attach	0.055	0.268	550																																				
Phenolic hardener	Trade secret	Die Attach	0.022	0.107	220	<table border="1"> <tr><td><b>3.65 (mg) Total</b></td><td><b>Die Attach</b></td><td><b>% of Total Weight</b></td><td><b>0.75</b></td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>73.36</td><td></td></tr> <tr><td>Epoxy Resin</td><td>9003-36-5</td><td>14.67</td><td></td></tr> <tr><td>Diluent</td><td>3101-60-8</td><td>7.33</td><td></td></tr> <tr><td>Phenolic hardener</td><td>Trade secret</td><td>2.93</td><td></td></tr> <tr><td>Amine type hardener</td><td>827-43-0</td><td>1.47</td><td></td></tr> <tr><td>Dicyandiamide</td><td>461-58-5</td><td>0.24</td><td></td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	<b>3.65 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>	Silver	7440-22-4	73.36		Epoxy Resin	9003-36-5	14.67		Diluent	3101-60-8	7.33		Phenolic hardener	Trade secret	2.93		Amine type hardener	827-43-0	1.47		Dicyandiamide	461-58-5	0.24		<b>Total</b>		<b>100.00</b>				
<b>3.65 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>																																						
Silver	7440-22-4	73.36																																							
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<b>Total</b>		<b>100.00</b>																																							
Amine type hardener	827-43-0	Die Attach	0.011	0.054	110																																				
Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18																																				
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000																																				
Doped Gold	7440-57-5	Wire Bond	0.200	0.973	2,000																																				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500																																				
<b>TOTALS:</b>			<b>100.000</b>	<b>486.700</b>	<b>1,000,000</b>																																				
<b>0.4867 g Total Mass</b>																																									
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).																																									
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						36.50 (mg) Total	Chip (Die)	% of Total Weight	7.5																																
						Doped Silicon	7440-21-3	100																																	
						<b>Total</b>		<b>100.00</b>																																	
						0.97 (mg) Total	Wire Bond	% of Total Weight	0.2																																
						Doped Gold	7440-57-5	100																																	
						<b>Total</b>		<b>100.00</b>																																	
						6.08 (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25																																
						Tin	7440-31-5	100.00																																	
						<b>Total</b>		<b>100.00</b>																																	
						<b>486.700</b>			<b>100.000</b>																																



Semiconductor Device Type: P and PE 14 (Lead) PDIP (Small Outline - .300") (D2 / DF)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			760.73	(mg) Total	Mold Compound	% of Total Weight	79.8		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm				
Fused Silica	60676-86-0	Mold Compound	57.456	547.728	574,560				
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	83.681	87,780				
Epoxy Resin	Trade Secret	Mold Compound	5.586	53.251	55,860				
Phenol Resin	Trade Secret	Mold Compound	5.586	53.251	55,860				
SiO2	14808-60-7	Mold Compound	1.995	19.018	19,950				
Carbon Black	1333-86-4	Mold Compound	0.399	3.804	3,990				
Copper	7440-50-8	Lead Frame	10.031	95.630	100,314				
Iron	7439-89-6	Lead Frame	0.247	2.352	2,468				
Silver	7440-22-4	Lead Frame	0.200	1.907	2,000				
Zinc	7440-66-6	Lead Frame	0.013	0.125	131				
Phosphorous	7723-14-0	Lead Frame	0.009	0.083	87				
Silver	7440-22-4	Die Attach	0.563	5.362	5,625				
Diester Resin	94-80-4	Die Attach	0.113	1.072	1,125				
Functionalized Urethane Resin	72869-86-4	Die Attach	0.038	0.357	375				
Epoxy Resin	9003-36-5	Die Attach	0.019	0.179	188				
Epoxy Resin	13561-08-5	Die Attach	0.019	0.179	188				
Silicon	7440-21-3	Chip (Die)	7.500	71.498	75,000				
Gold	7440-57-5	Wire Bond	0.200	1.907	2,000				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	11.916	12,500				
<b>0.9533 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>953.300</b>	<b>1,000.000</b>			
<p>This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.</p> <p>Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a></p> <p>The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.</p> <p>Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.</p> <p>Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.</p> <p>Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.</p>									
			100.10	(mg) Total	Lead Frame	% of Total Weight	10.5		
			7.15	(mg) Total	Die Attach	% of Total Weight	0.75		
			71.50	Total (mg)	Chip (Die)	% of Total Weight	7.5		
			1.91	(mg) Total	Wire Bond	% of Total Weight	0.2		
			11.92	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25		
			953.300				100.000		



**Semiconductor Device Type: P and PE 16 (Lead) PDIP (Small Outline - .300") (D6 / DU)**

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	57.205	636.503	572,050
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.122	45.866	41,221
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.122	45.866	41,221
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.649	18.346	16,489
Carbon Black	1333-86-4	Mold Compound	0.202	2.246	2,019
Copper	7440-50-8	Lead Frame	29.426	327.409	294,256
Iron	7439-89-6	Lead Frame	0.724	8.054	7,238
Silver	7440-22-4	Lead Frame	0.587	6.528	5,867
Zinc	7440-66-6	Lead Frame	0.039	0.428	385
Phosphorous	7723-14-0	Lead Frame	0.025	0.283	254
Silver	7440-22-4	Die Attach	0.052	0.576	518
Epoxy resin	Trade Secret	Die Attach	0.016	0.179	161
Gamma-butyrolactone	96-48-0	Die Attach	0.002	0.023	21
Silicon	7440-21-3	Chip (Die)	0.150	1.669	1,500
Gold	7440-57-5	Wire Bond	0.040	0.445	400
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.640	18.248	16,400
<b>TOTALS:</b>			<b>100.000</b>	<b>1,112.670</b>	<b>1,000,000</b>

**1.1127 g Total Mass**

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Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																			
			748.83	(mg) Total	Mold Compound	% of Total Weight	67.3																		
			<table border="1"> <tr> <td>Silica, vitreous</td> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>6.13</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>6.13</td> </tr> <tr> <td>Epoxy, Cresol Novolac</td> <td>29690-82-2</td> <td>2.45</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>	
Silica, vitreous	60676-86-0	85.00																							
Epoxy Resin	Trade Secret	6.13																							
Phenolic Resin	Trade Secret	6.13																							
Epoxy, Cresol Novolac	29690-82-2	2.45																							
Carbon Black	1333-86-4	0.30																							
<b>Total</b>		<b>100.00</b>																							
			342.70	(mg) Total	Lead Frame	% of Total Weight	30.8																		
			<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.54</td> </tr> <tr> <td>Iron</td> <td>7439-89-6</td> <td>2.35</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.91</td> </tr> <tr> <td>Zinc</td> <td>7440-66-6</td> <td>0.13</td> </tr> <tr> <td>Phosphorous</td> <td>7723-14-0</td> <td>0.08</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	95.54																							
Iron	7439-89-6	2.35																							
Silver	7440-22-4	1.91																							
Zinc	7440-66-6	0.13																							
Phosphorous	7723-14-0	0.08																							
<b>Total</b>		<b>100.00</b>																							
			0.78	(mg) Total	Die Attach	% of Total Weight	0.07																		
			<table border="1"> <tr> <td>Silver</td> <td>7440-22-4</td> <td>74</td> </tr> <tr> <td>Epoxy resin</td> <td>Trade Secret</td> <td>23</td> </tr> <tr> <td>Gamma-butyrolactone</td> <td>96-48-0</td> <td>3</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Silver	7440-22-4	74	Epoxy resin	Trade Secret	23	Gamma-butyrolactone	96-48-0	3	<b>Total</b>		<b>100.00</b>							
Silver	7440-22-4	74																							
Epoxy resin	Trade Secret	23																							
Gamma-butyrolactone	96-48-0	3																							
<b>Total</b>		<b>100.00</b>																							
			1.67	Total (mg)	Chip (Die)	% of Total Weight	0.15																		
			<table border="1"> <tr> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>													
Doped Silicon	7440-21-3	100																							
<b>Total</b>		<b>100.00</b>																							
			0.45	(mg) Total	Wire Bond	% of Total Weight	0.04																		
			<table border="1"> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>													
Doped Gold	7440-57-5	100																							
<b>Total</b>		<b>100.00</b>																							
			18.25	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.64																		
			<table border="1"> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>													
Tin	7440-31-5	100.00																							
<b>Total</b>		<b>100.00</b>																							
			1,112.670				100.000																		





Semiconductor Device Type: P 18 (Lead) PDIP .300" (F3 / FP)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Fused Silica	60676-86-0	Mold Compound	57.456	717.051	574,560					
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	109.549	87,780					
Epoxy Resin	Trade Secret	Mold Compound	5.586	69.713	55,860					
Phenol Resin	Trade Secret	Mold Compound	5.586	69.713	55,860					
SiO2	14808-60-7	Mold Compound	1.995	24.898	19,950					
Carbon Black	1333-86-4	Mold Compound	0.399	4.980	3,990					
Copper	7440-50-8	Lead Frame	10.031	125.192	100,314					
Iron	7439-89-6	Lead Frame	0.247	3.079	2,468					
Silver	7440-22-4	Lead Frame	0.200	2.496	2,000					
Zinc	7440-66-6	Lead Frame	0.013	0.164	131					
Phosphorous	7723-14-0	Lead Frame	0.009	0.108	87					
Silver	7440-22-4	Die Attach	0.554	6.908	5,535					
Epoxy Resin	9003-36-5	Die Attach	0.141	1.760	1,410					
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.047	0.590	473					
Phenolic hardener	92-88-6	Die Attach	0.002	0.028	23					
Butyl cellosolve acetate	112-07-2	Die Attach	0.006	0.075	60					
Silicon	7440-21-3	Chip (Die)	7.500	93.600	75,000					
Gold	7440-57-5	Wire Bond	0.200	2.496	2,000					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	15.600	12,500					
<b>TOTALS:</b>			<b>100.000</b>	<b>1,248.000</b>	<b>1,000,000</b>					

995.90		(mg) Total	Mold Compound	% of Total Weight	79.8
		Fused Silica	60676-86-0	72.00	
		Metal Hydro Oxide	Trade Secret	11.00	
		Epoxy Resin	Trade Secret	7.00	
		Phenol Resin	Trade Secret	7.00	
		SiO2	14808-60-7	2.50	
		Carbon Black	1333-86-4	0.50	
		<b>Total</b>			<b>100.00</b>
131.04		(mg) Total	Lead Frame	% of Total Weight	10.5
		Copper	7440-50-8	95.54	
		Iron	7439-89-6	2.35	
		Silver	7440-22-4	1.91	
		Zinc	7440-66-6	0.13	
		Phosphorous	7723-14-0	0.08	
		<b>Total</b>			<b>100.00</b>
9.36		(mg) Total	Die Attach	% of Total Weight	0.75
		Silver	7440-22-4	74	
		Epoxy Resin	9003-36-5	19	
		t-Butyl phenyl glycidyl ether	3101-60-8	6	
		Phenolic hardener	92-88-6	0	
		Butyl cellosolve acetate	112-07-2	1	
		<b>Total</b>			<b>100.00</b>
93.60		Total (mg)	Chip (Die)	% of Total Weight	7.5
		Doped Silicon	7440-21-3	100	
		<b>Total</b>			<b>100.00</b>
2.50		(mg) Total	Wire Bond	% of Total Weight	0.2
		Gold	7440-57-5	100	
		<b>Total</b>			<b>100.00</b>
15.60		(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
		Tin	7440-31-5	100.00	
		<b>Total</b>			<b>100.00</b>
<b>1,248.000</b>					<b>100.000</b>

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Semiconductor Device Type: PG 24 (Lead) PDIP Wide Outline - .600" (J4 / JT)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																									
<b>Basic Substance</b>				<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	1267.01	(mg) Total	Mold Compound	% of Total Weight	68.46																						
Silica, vitreous				60676-86-0	Mold Compound	58.191	1076.958	581,910	<table border="1"> <tr> <td>Silica, vitreous</td> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Epoxy Resin (No bromine, No diantimony trioxide)</td> <td>Trade Secret</td> <td>6.13</td> </tr> <tr> <td>Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)</td> <td>Trade Secret</td> <td>6.13</td> </tr> <tr> <td>Epoxy, Cresol Novolac</td> <td>29690-82-2</td> <td>2.45</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					Silica, vitreous	60676-86-0	85.00	Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	6.13	Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>				
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Epoxy Resin (No bromine, No diantimony trioxide)				Trade Secret	Mold Compound	4.193	77.604	41,932	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Lead Frame</b></td> <td><b>% of Total Weight</b></td> <td><b>29.13</b></td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.54</td> </tr> <tr> <td>Iron</td> <td>7439-89-6</td> <td>2.35</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.91</td> </tr> <tr> <td>Zinc</td> <td>7440-66-6</td> <td>0.13</td> </tr> <tr> <td>Phosphorous</td> <td>7723-14-0</td> <td>0.08</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>29.13</b>	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>
<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>29.13</b>																																
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Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)				Trade Secret	Mold Compound	4.193	77.604	41,932	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Die Attach</b></td> <td><b>% of Total Weight</b></td> <td><b>0.14</b></td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>74</td> </tr> <tr> <td>Epoxy resin</td> <td>Trade Secret</td> <td>23</td> </tr> <tr> <td>Gamma-butyrolactone</td> <td>96-48-0</td> <td>3</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.14</b>	Silver	7440-22-4	74	Epoxy resin	Trade Secret	23	Gamma-butyrolactone	96-48-0	3	<b>Total</b>		<b>100.00</b>						
<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.14</b>																																
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Epoxy resin	Trade Secret	23																																	
Gamma-butyrolactone	96-48-0	3																																	
<b>Total</b>		<b>100.00</b>																																	
Epoxy, Cresol Novolac				29690-82-2	Mold Compound	1.677	31.042	16,773	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> <td><b>0.75</b></td> </tr> <tr> <td>Chip (Die)</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.75</b>	Chip (Die)	7440-21-3	100	<b>Total</b>		<b>100.00</b>												
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Chip (Die)	7440-21-3	100																																	
<b>Total</b>		<b>100.00</b>																																	
Carbon Black				1333-86-4	Mold Compound	0.205	3.801	2,054	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> <td><b>0.03</b></td> </tr> <tr> <td>Wire Bond</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.03</b>	Wire Bond	7440-57-5	100	<b>Total</b>		<b>100.00</b>												
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Wire Bond	7440-57-5	100																																	
<b>Total</b>		<b>100.00</b>																																	
Copper				7440-50-8	Lead Frame	27.830	515.060	278,301	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> <td><b>1.49</b></td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.49</b>	Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>												
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Tin	7440-31-5	100.00																																	
<b>Total</b>		<b>100.00</b>																																	
Iron				7439-89-6	Lead Frame	0.685	12.669	6,846	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> <td><b>0.75</b></td> </tr> <tr> <td>Chip (Die)</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.75</b>	Chip (Die)	7440-21-3	100	<b>Total</b>		<b>100.00</b>												
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Chip (Die)	7440-21-3	100																																	
<b>Total</b>		<b>100.00</b>																																	
Silver				7440-22-4	Lead Frame	0.555	10.270	5,549	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> <td><b>0.03</b></td> </tr> <tr> <td>Wire Bond</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.03</b>	Wire Bond	7440-57-5	100	<b>Total</b>		<b>100.00</b>												
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Wire Bond	7440-57-5	100																																	
<b>Total</b>		<b>100.00</b>																																	
Zinc				7440-66-6	Lead Frame	0.036	0.674	364	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> <td><b>1.49</b></td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.49</b>	Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>												
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Tin	7440-31-5	100.00																																	
<b>Total</b>		<b>100.00</b>																																	
Phosphorous				7723-14-0	Lead Frame	0.024	0.445	240	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> <td><b>0.75</b></td> </tr> <tr> <td>Chip (Die)</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.75</b>	Chip (Die)	7440-21-3	100	<b>Total</b>		<b>100.00</b>												
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<b>Total</b>		<b>100.00</b>																																	
Silver				7440-22-4	Die Attach	0.104	1.917	1,036	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> <td><b>0.03</b></td> </tr> <tr> <td>Wire Bond</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.03</b>	Wire Bond	7440-57-5	100	<b>Total</b>		<b>100.00</b>												
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Wire Bond	7440-57-5	100																																	
<b>Total</b>		<b>100.00</b>																																	
Epoxy resin				Trade Secret	Die Attach	0.032	0.596	322	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> <td><b>0.75</b></td> </tr> <tr> <td>Chip (Die)</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.75</b>	Chip (Die)	7440-21-3	100	<b>Total</b>		<b>100.00</b>												
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Chip (Die)	7440-21-3	100																																	
<b>Total</b>		<b>100.00</b>																																	
Gamma-butyrolactone				96-48-0	Die Attach	0.004	0.078	42	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> <td><b>0.03</b></td> </tr> <tr> <td>Wire Bond</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.03</b>	Wire Bond	7440-57-5	100	<b>Total</b>		<b>100.00</b>												
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Wire Bond	7440-57-5	100																																	
<b>Total</b>		<b>100.00</b>																																	
Silicon				7440-21-3	Chip (Die)	0.750	13.880	7,500	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> <td><b>1.49</b></td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.49</b>	Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>												
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<b>Total</b>		<b>100.00</b>																																	
Gold				7440-57-5	Wire Bond	0.030	0.555	300	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> <td><b>0.75</b></td> </tr> <tr> <td>Chip (Die)</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.75</b>	Chip (Die)	7440-21-3	100	<b>Total</b>		<b>100.00</b>												
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<b>Total</b>		<b>100.00</b>																																	
Tin				7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.490	27.576	14,900	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> <td><b>0.03</b></td> </tr> <tr> <td>Wire Bond</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.03</b>	Wire Bond	7440-57-5	100	<b>Total</b>		<b>100.00</b>												
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<b>Total</b>		<b>100.00</b>																																	
<b>TOTALS:</b>						<b>100.000</b>	<b>1,850.730</b>	<b>1,000,000</b>	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> <td><b>0.75</b></td> </tr> <tr> <td>Chip (Die)</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.75</b>	Chip (Die)	7440-21-3	100	<b>Total</b>		<b>100.00</b>												
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<b>Total</b>		<b>100.00</b>																																	
<b>1.8507 g Total Mass</b>									<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> <td><b>0.03</b></td> </tr> <tr> <td>Wire Bond</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>					<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.03</b>	Wire Bond	7440-57-5	100	<b>Total</b>		<b>100.00</b>												
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Semiconductor Device Type: P 20 (Lead) PDIP .300" (G6 / GV)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3																																														
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1045.39	(mg) Total	Mold Compound	% of Total Weight	69.1																																															
Fused Silica	60676-86-0	Mold Compound	49.752	752.683	497.520	<table border="1"> <tr><td>Fused Silica</td><td>60676-86-0</td><td>72.00</td></tr> <tr><td>Metal Hydro Oxide</td><td>Trade Secret</td><td>11.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>7.00</td></tr> <tr><td>Phenol Resin</td><td>Trade Secret</td><td>7.00</td></tr> <tr><td>SiO2</td><td>14808-60-7</td><td>2.50</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.50</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Fused Silica	60676-86-0	72.00	Metal Hydro Oxide	Trade Secret	11.00	Epoxy Resin	Trade Secret	7.00	Phenol Resin	Trade Secret	7.00	SiO2	14808-60-7	2.50	Carbon Black	1333-86-4	0.50	Total			100.00	<table border="1"> <tr><td>(mg) Total</td><td>Lead Frame</td><td>% of Total Weight</td><td>28.98</td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td><td></td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td><td></td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td><td></td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td><td></td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total	Lead Frame	% of Total Weight	28.98	Copper	7440-50-8	95.54		Iron	7439-89-6	2.35		Silver	7440-22-4	1.91		Zinc	7440-66-6	0.13		Phosphorous	7723-14-0	0.08		Total			100.00
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Metal Hydro Oxide	Trade Secret	Mold Compound	7.601	114.993	76.010	<table border="1"> <tr><td>(mg) Total</td><td>Die Attach</td><td>% of Total Weight</td><td>0.09</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td>75</td><td></td></tr> <tr><td>Modified Epoxy Resin</td><td>13561-08-5</td><td>14</td><td></td></tr> <tr><td>Diglycidylether of bisphenol-F</td><td>54208-63-8</td><td>8</td><td></td></tr> <tr><td>Modified Amine</td><td>827-43-0</td><td>4</td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total	Die Attach	% of Total Weight	0.09	Silver (Ag)	7440-22-4	75		Modified Epoxy Resin	13561-08-5	14		Diglycidylether of bisphenol-F	54208-63-8	8		Modified Amine	827-43-0	4		Total			100.00																											
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Epoxy Resin	Trade Secret	Mold Compound	4.837	73.178	48.370		<table border="1"> <tr><td>Total (mg)</td><td>Chip (Die)</td><td>% of Total Weight</td><td>0.3</td></tr> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Total (mg)	Chip (Die)	% of Total Weight	0.3	Doped Silicon	7440-21-3	100		Total			100.00																																						
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SiO2	14808-60-7	Mold Compound	1.728	26.135	17.275			<table border="1"> <tr><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>1.51</td></tr> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.51	Tin	7440-31-5	100.00		Total			100.00																																					
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Carbon Black	1333-86-4	Mold Compound	0.346	5.227	3.455		<table border="1"> <tr><td>Total (mg)</td><td></td><td></td><td>4.54</td></tr> <tr><td>Copper</td><td>7440-50-8</td><td></td><td></td></tr> <tr><td>Iron</td><td>7439-89-6</td><td></td><td></td></tr> <tr><td>Silver</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td></td><td></td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>		Total (mg)			4.54	Copper	7440-50-8			Iron	7439-89-6			Silver	7440-22-4			Zinc	7440-66-6			Phosphorous	7723-14-0			Total			100.00																					
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Copper	7440-50-8	Lead Frame	27.687	418.865	276.868	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td>Modified Epoxy Resin</td><td>13561-08-5</td><td></td><td></td></tr> <tr><td>Diglycidylether of bisphenol</td><td>54208-63-8</td><td></td><td></td></tr> <tr><td>Modified Amine</td><td>827-43-0</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Modified Epoxy Resin	13561-08-5			Diglycidylether of bisphenol	54208-63-8			Modified Amine	827-43-0			Total			100.00																											
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Iron	7439-89-6	Lead Frame	0.681	10.303	6.810	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td>Modified Epoxy Resin</td><td>13561-08-5</td><td></td><td></td></tr> <tr><td>Diglycidylether of bisphenol</td><td>54208-63-8</td><td></td><td></td></tr> <tr><td>Modified Amine</td><td>827-43-0</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Modified Epoxy Resin	13561-08-5			Diglycidylether of bisphenol	54208-63-8			Modified Amine	827-43-0			Total			100.00																											
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Silver	7440-22-4	Lead Frame	0.552	8.352	5.521	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td>Modified Epoxy Resin</td><td>13561-08-5</td><td></td><td></td></tr> <tr><td>Diglycidylether of bisphenol</td><td>54208-63-8</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Modified Epoxy Resin	13561-08-5			Diglycidylether of bisphenol	54208-63-8			Total			100.00																															
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Zinc	7440-66-6	Lead Frame	0.036	0.548	362	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td>Modified Epoxy Resin</td><td>13561-08-5</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Modified Epoxy Resin	13561-08-5			Total			100.00																																			
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Modified Epoxy Resin	13561-08-5																																																								
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Phosphorous	7723-14-0	Lead Frame	0.024	0.362	239	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Total			100.00																																							
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Silver (Ag)	7440-22-4																																																								
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Silver (Ag)	7440-22-4	Die Attach	0.068	1.021	675	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Total			100.00																																							
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Modified Epoxy Resin	13561-08-5	Die Attach	0.013	0.191	126	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Total			100.00																																							
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Silver (Ag)	7440-22-4																																																								
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Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.007	0.102	68	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Total			100.00																																							
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Total			100.00																																																						
Modified Amine	827-43-0	Die Attach	0.003	0.048	32	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Total			100.00																																							
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Silver (Ag)	7440-22-4																																																								
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Silicon	7440-21-3	Chip (Die)	0.300	4.539	3,000	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Total			100.00																																							
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Silver (Ag)	7440-22-4																																																								
Total			100.00																																																						
Gold	7440-57-5	Wire Bond	0.020	0.303	200	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Total			100.00																																							
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Silver (Ag)	7440-22-4																																																								
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Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.510	22.844	15,100	<table border="1"> <tr><td>(mg) Total</td><td></td><td></td><td>0.30</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td></td><td></td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.30	Silver (Ag)	7440-22-4			Total			100.00																																							
(mg) Total			0.30																																																						
Silver (Ag)	7440-22-4																																																								
Total			100.00																																																						
<b>1.5129 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>1,512.870</b>	<b>1,512.870</b>	<b>100.000</b>	<b>100.000</b>	<b>100.000</b>																																																

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

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Semiconductor Device Type: P and PI 28 (Lead) PDIP (Wide Outline -.600") (Q2 / QB)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight	79.8	
Fused Silica	60676-86-0	Mold Compound	57.456	2336.563	574.560	Fused Silica	60676-86-0	72.00	79.8	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	356.975	87.780	Metal Hydro Oxide	Trade Secret	11.00		
Epoxy Resin	Trade Secret	Mold Compound	5.586	227.166	55.860	Epoxy Resin	Trade Secret	7.00		
Phenol Resin	Trade Secret	Mold Compound	5.586	227.166	55.860	Phenol Resin	Trade Secret	7.00		
SiO2	14808-60-7	Mold Compound	1.995	81.131	19.950	SiO2	14808-60-7	2.50		
Carbon Black	1333-86-4	Mold Compound	0.399	16.226	3.990	Carbon Black	1333-86-4	0.50		
Copper	7440-50-8	Lead Frame	9.984	406.006	99.837	<b>Total 100.00</b>				
Iron	7439-89-6	Lead Frame	0.246	9.987	2.456	<b>424.97 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>		<b>10.45</b>
Silver	7440-22-4	Lead Frame	0.199	8.096	1.991	Copper	7440-50-8	95.54		10.45
Zinc	7440-66-6	Lead Frame	0.013	0.531	131	Iron	7439-89-6	2.35		
Phosphorous	7723-14-0	Lead Frame	0.009	0.351	86	Silver	7440-22-4	1.91		
Polyimide	25038-81-7	Lead Frame	0.022	0.874	215	Zinc	7440-66-6	0.13		
Poly - ethylene - terephthalate	25038-59-9	Lead Frame	0.019	0.773	190	Phosphorous	7723-14-0	0.08		
NBR	9003-18-3	Lead Frame	0.004	0.142	35	<b>Total 100.00</b>				
Bismaleimide	79922-55-7	Lead Frame	0.003	0.122	30	<b>2.03 (mg) Total</b>	<b>Lead Lock Tape</b>	<b>% of Total Weight</b>	<b>0.05</b>	
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.122	30	Polyimide	25038-81-7	43.00	0.05	
Silver	7440-22-4	Die Attach	0.550	22.375	5.502	Poly - ethylene - terephthalate	25038-59-9	38.00		
Epoxy Resin	9003-36-5	Die Attach	0.110	4.474	1,100	NBR	9003-18-3	7.00		
Diluent	3101-60-8	Die Attach	0.055	2.236	550	Bismaleimide	79922-55-7	6.00		
Phenolic hardener	Trade secret	Die Attach	0.022	0.894	220	Phenol resin	28453-20-5 / 9016-83-5	6.00		
Amine type hardener	827-43-0	Die Attach	0.011	0.448	110	<b>Total 100.00</b>				
Dicyandiamide	461-58-5	Die Attach	0.002	0.073	18	<b>30.50 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>		<b>0.75</b>
Silicon	7440-21-3	Chip (Die)	7.500	305.003	75,000	Silver	7440-22-4	73		0.75
Gold	7440-57-5	Wire Bond	0.200	8.133	2,000	Epoxy Resin	9003-36-5	15		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	50.834	12,500	Diluent	3101-60-8	7		
<b>TOTALS:</b>			<b>100.000</b>	<b>4,066.700</b>	<b>1,000,000</b>	Phenolic hardener	Trade secret	3		
						Amine type hardener	827-43-0	1		
						Dicyandiamide	461-58-5	0		
						<b>Total 100.00</b>				
						<b>305.00 Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.5</b>	
						Doped Silicon	7440-21-3	100	7.5	
						<b>Total 100.00</b>				
						<b>8.13 (mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.2</b>	
						Doped Gold	7440-57-5	100	0.2	
						<b>Total 100.00</b>				
						<b>50.83 (mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.25</b>	
							7440-31-5	100.00	1.25	
						<b>Total 100.00</b>				
						<b>4,064.667</b>				<b>100.000</b>

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Semiconductor Device Type: PHE 32 (Lead) PDIP (Wide Outline - .600") (P2)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3		
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	4478.48	(mg) Total	Mold Compound	% of Total Weight	85.67		
Silica, vitreous	60676-86-0	Mold Compound	72.820	3806.712	728.195			Silica, vitreous	60676-86-0	85.00		
Epoxy Resin	Trade Secret	Mold Compound	5.247	274.307	52.473			Epoxy Resin	Trade Secret	6.13		
Phenolic Resin	Trade Secret	Mold Compound	5.247	274.307	52.473			Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	2.099	109.723	20.989			Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.257	13.435	2.570			Carbon Black	1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	12.783	668.240	127.829			<b>Total 100.00</b>				
Iron	7439-89-6	Lead Frame	0.314	16.437	3.144	699.45	(mg) Total	Lead Frame	% of Total Weight	13.38		
Silver	7440-22-4	Lead Frame	0.255	13.325	2.549			Copper	7440-50-8	95.54		
Zinc	7440-66-6	Lead Frame	0.017	0.874	167			Iron	7439-89-6	2.35		
Phosphorous	7723-14-0	Lead Frame	0.011	0.577	110			Silver	7440-22-4	1.91		
Silver (Ag)	7440-22-4	Die Attach	0.128	6.691	1,280			Zinc	7440-66-6	0.13		
Epoxy Resin	Trade Secret	Die Attach	0.027	1.422	272			Phosphorous	7723-14-0	0.08		
Copper ( Cu )	7440-50-8	Die Attach	0.005	0.251	48			<b>Total 100.00</b>				
Doped Silicon	7440-21-3	Chip (Die)	0.220	11.501	2,200	8.36	(mg) Total	Die Attach	% of Total Weight	0.16		
Doped Gold	7440-57-5	Wire Bond	0.030	1.568	300			Silver (Ag)	7440-22-4	80.00		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.540	28.229	5,400			Epoxy Resin	Trade Secret	17.00		
<b>5.2276 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>5,227.600</b>	<b>1,000,000</b>		Copper ( Cu )	7440-50-8	3.00		
						<b>Total 100.00</b>						
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								11.50	(mg) Total	Chip (Die)	% of Total Weight	0.22
								Doped Silicon	7440-21-3	100		
						<b>Total 100.00</b>						
								1.57	(mg) Total	Wire Bond	% of Total Weight	0.03
								Doped Gold	7440-57-5	100.00		
						<b>Total 100.00</b>						
								28.23	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.54
								Tin	7440-31-5	100.00		
						<b>Total 100.00</b>						
						5,227.600					100.000	



Semiconductor Device Type: P and PL 40 (Lead) PDIP (Wide Outline - .600") (S2 / SL)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
TOTALS:						100.000	6,500.000	1,000,000		
<b>6.5000 g Total Mass</b>										
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						5187.00	(mg) Total	Mold Compound	% of Total Weight	79.8
								Fused Silica	60676-86-0	72.00
								Metal Hydro Oxide	Trade Secret	11.00
								Epoxy Resin	Trade Secret	7.00
								Phenol Resin	Trade Secret	7.00
								SiO2	14808-60-7	2.50
								Carbon Black	1333-86-4	0.50
								Total		100.00
						679.25	(mg) Total	Lead Frame	% of Total Weight	10.45
								Copper	7440-50-8	95.54
								Iron	7439-89-6	2.35
								Silver	7440-22-4	1.91
								Zinc	7440-66-6	0.13
								Phosphorous	7723-14-0	0.08
								Total		100.00
						3.25	(mg) Total	Lead Lock Tape	% of Total Weight	0.05
								Polyimide	25038-81-7	43.00
								Poly - ethylene - terephthalate	25038-59-9	38.00
								NBR	9003-18-3	7.00
								Bismaleimide	79922-55-7	6.00
								Phenol resin	28453-20-5 / 9016-83-5	6.00
								Total		100.00
						48.75	(mg) Total	Die Attach	% of Total Weight	0.75
								Silver	7440-22-4	73
								Epoxy Resin	9003-36-5	15
								Diluent	3101-60-8	7
								Phenolic hardener	Trade secret	3
								Amine type hardener	827-43-0	1
								Dicyandiamide	461-58-5	0
								Total		100.00
						487.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
								Doped Silicon	7440-21-3	100
								Total		100.00
						13.00	(mg) Total	Wire Bond	% of Total Weight	0.2
								Doped Gold	7440-57-5	100
								Total		100.00
						81.25	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
								Tin	7440-31-5	100.00
								Total		100.00
						6,496.750			100.000	



Semiconductor Device Type: SP 28 (Lead) SPDIP .300" (M3 / MD)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Fused Silica	60676-86-0	Mold Compound	57.456	1199.394	574,560	1665.83 (mg) Total			79.8	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	183.241	87,780	Mold Compound				
Epoxy Resin	Trade Secret	Mold Compound	5.586	116.608	55,860	% of Total Weight				
Phenol Resin	Trade Secret	Mold Compound	5.586	116.608	55,860	Fused Silica 60676-86-0 72.00				
SiO2	14808-60-7	Mold Compound	1.995	41.646	19,950	Metal Hydro Oxide Trade Secret 11.00				
Carbon Black	1333-86-4	Mold Compound	0.399	8.329	3,990	Epoxy Resin Trade Secret 7.00				
Copper	7440-50-8	Lead Frame	9.984	208.409	99,837	Phenol Resin Trade Secret 7.00				
Iron	7439-89-6	Lead Frame	0.246	5.126	2,456	SiO2 14808-60-7 2.50				
Silver	7440-22-4	Lead Frame	0.199	4.156	1,991	Carbon Black 1333-86-4 0.50				
Zinc	7440-66-6	Lead Frame	0.013	0.273	131	Total 100.00				
Phosphorous	7723-14-0	Lead Frame	0.009	0.180	86	218.14 (mg) Total			10.45	
Polyimide	25038-81-7	Lead Frame	0.022	0.449	215	Copper 7440-50-8 95.54				
Poly - ethylene - terephthalate	25038-59-9	Lead Frame	0.019	0.397	190	Iron 7439-89-6 2.35				
NBR	9003-18-3	Lead Frame	0.004	0.073	35	Silver 7440-22-4 1.91				
Bismaleimide	79922-55-7	Lead Frame	0.003	0.063	30	Zinc 7440-66-6 0.13				
Phenol resin	28453-20-5 / 9016-83-5	Lead Frame	0.003	0.063	30	Phosphorous 7723-14-0 0.08				
Silver	7440-22-4	Die Attach	0.550	11.485	5,502	Total 100.00				
Epoxy Resin	9003-36-5	Die Attach	0.110	2.297	1,100	1.04 (mg) Total			0.05	
Diluent	3101-60-8	Die Attach	0.055	1.148	550	Polyimide 25038-81-7 43.00				
Phenolic hardener	Trade secret	Die Attach	0.022	0.459	220	Poly - ethylene - terephthalate 25038-59-9 38.00				
Amine type hardener	827-43-0	Die Attach	0.011	0.230	110	NBR 9003-18-3 7.00				
Dicyandiamide	461-58-5	Die Attach	0.002	0.038	18	Bismaleimide 79922-55-7 6.00				
Silicon	7440-21-3	Chip (Die)	7.500	156.563	75,000	Phenol resin 28453-20-5 / 9016-83-5 6.00				
Gold	7440-57-5	Wire Bond	0.200	4.175	2,000	Total 100.00				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	26.094	12,500	15.66 (mg) Total			0.75	
<b>2.0875 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>2,087.500</b>	<b>1,000,000</b>				

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.

Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.

Semiconductor Device Type: SP 28 (Lead) SPDIP .300" (M3 / MD)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm				
						1665.83 (mg) Total			79.8
						Mold Compound			
						% of Total Weight			
						Fused Silica 60676-86-0 72.00			
						Metal Hydro Oxide Trade Secret 11.00			
						Epoxy Resin Trade Secret 7.00			
						Phenol Resin Trade Secret 7.00			
						SiO2 14808-60-7 2.50			
						Carbon Black 1333-86-4 0.50			
						Total 100.00			
						218.14 (mg) Total			10.45
						Lead Frame			
						% of Total Weight			
						Copper 7440-50-8 95.54			
						Iron 7439-89-6 2.35			
						Silver 7440-22-4 1.91			
						Zinc 7440-66-6 0.13			
						Phosphorous 7723-14-0 0.08			
						Total 100.00			
						1.04 (mg) Total			0.05
						Lead Lock Tape			
						% of Total Weight			
						Polyimide 25038-81-7 43.00			
						Poly - ethylene - terephthalate 25038-59-9 38.00			
						NBR 9003-18-3 7.00			
						Bismaleimide 79922-55-7 6.00			
						Phenol resin 28453-20-5 / 9016-83-5 6.00			
						Total 100.00			
						15.66 (mg) Total			0.75
						Die Attach			
						% of Total Weight			
						Silver 7440-22-4 73			
						Epoxy Resin 9003-36-5 15			
						Diluent 3101-60-8 7			
						Phenolic hardener Trade secret 3			
						Amine type hardener 827-43-0 1			
						Dicyandiamide 461-58-5 0			
						Total 100.00			
						156.56 Total (mg)			7.5
						Chip (Die)			
						% of Total Weight			
						Doped Silicon 7440-21-3 100			
						Total 100.00			
						4.18 (mg) Total			0.2
						Wire Bond			
						% of Total Weight			
						Doped Gold 7440-57-5 100			
						Total 100.00			
						26.09 (mg) Total			1.25
						Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			
						% of Total Weight			
						Tin 7440-31-5 100.00			
						Total 100.00			
						2,086.456			100.000



Semiconductor Device Type: L 28 (Lead) PLCC (L4)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	818.39	(mg) Total	Mold Compound	% of Total Weight	71.63
Silica, vitreous	60676-86-0	Mold Compound	60.886	695.635	608,855		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.387	50.127	43,873		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.387	50.127	43,873		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.755	20.051	17,549		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.215	2.455	2,149		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.115	286.945	251,148		<b>Total</b>			<b>100.00</b>
Silver	7440-22-4	Lead Frame	0.488	5.578	4,883	292.83	(mg) Total	Lead Frame	% of Total Weight	25.63
Zirconium	7440-67-7	Lead Frame	0.026	0.293	256		Copper	7440-50-8	97.99	
Manganese	7439-96-5	Lead Frame	0.001	0.015	13		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.163	1.860	1,628		Zirconium	7440-67-7	0.10	
Epoxy resin	Trade Secret	Die Attach	0.051	0.578	506		Manganese	7439-96-5	0.01	
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.075	66		<b>Total</b>			<b>100.00</b>
Silicon	7440-21-3	Chip (Die)	1.210	13.825	12,100	2.51	(mg) Total	Die Attach	% of Total Weight	0.22
Gold	7440-57-5	Wire Bond	0.070	0.800	700		Silver	7440-22-4	74	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.240	14.167	12,400		Epoxy resin	Trade Secret	23	
<b>TOTALS:</b>			<b>100.000</b>	<b>1,142.530</b>	<b>1,000,000</b>		Gamma-butyrolactone	96-48-0	3	
<b>1.1425 g Total Mass</b>										
							(mg) Total	Chip (Die)	% of Total Weight	1.21
						13.82	Total (mg)	Chip (Die)	% of Total Weight	1.21
							Doped Silicon	7440-21-3	100	
							<b>Total</b>			<b>100.00</b>
						0.80	(mg) Total	Wire Bond	% of Total Weight	0.07
							Doped Gold	7440-57-5	100	
							<b>Total</b>			<b>100.00</b>
						14.17	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.24
							Tin	7440-31-5	100.00	
							<b>Total</b>			<b>100.00</b>
						1,142.530				100.000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

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Semiconductor Device Type: NHE 32 (Lead) PLCC (P3)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	677.40	(mg) Total	Mold Compound	% of Total Weight	60	
Silica, vitreous	60676-86-0	Mold Compound	51.000	575.790	510,000		Silica, vitreous	60676-86-0	85.00		
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36,750		Epoxy Resin	Trade Secret	6.13		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	41.491	36,750		Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	16.596	14,700		Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.180	2.032	1,800		Carbon Black	1333-86-4	0.30		
Copper ( Cu )	7440-50-8	Lead Frame	29.760	335.990	297,600						
Nickle ( Ni )	7440-02-0	Lead Frame	1.280	14.451	12,800						
Silicon ( Si )	7440-21-3	Lead Frame	0.320	3.613	3,200						
Magnesium ( Mg )	7439-95-4	Lead Frame	0.064	0.723	640						
Silver (Ag)	7440-22-4	Lead Frame	0.576	6.503	5,760						
Silver (Ag)	7440-22-4	Die Attach	0.064	0.723	640						
Epoxy Resin	Trade Secret	Die Attach	0.014	0.154	136						
Copper ( Cu )	7440-50-8	Die Attach	0.002	0.027	24						
Silicon	7440-21-3	Chip (Die)	4.820	54.418	48,200						
Gold	7440-57-5	Wire Bond	0.100	1.129	1,000						
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.000	33.870	30,000						
<b>TOTALS:</b>			<b>100.000</b>	<b>1,129.000</b>	<b>1,000,000</b>						
<b>1.1290 g Total Mass</b>											
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						<b>361.28</b>		<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>32</b>
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.											
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>											
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.											
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						<b>0.90</b>		<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.08</b>
						<b>54.42</b>		<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>4.82</b>
						<b>1.13</b>		<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.1</b>
						<b>33.87</b>		<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>3</b>
						<b>677.40</b>		<b>(mg) Total</b>	<b>Total</b>	<b>% of Total Weight</b>	<b>60</b>
						<b>1,129.000</b>		<b>Total</b>	<b>100.00</b>		<b>100.000</b>



Semiconductor Device Type: L & NJE 44 (Lead) PLCC (T2 / TC)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1807.79	(mg) Total	Mold Compound	% of Total Weight	76.1
Silica, vitreous	60676-86-0	Mold Compound	64.685	1536.618	646,850		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.661	110.727	46,611		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.864	44.291	18,645		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.228	5.423	2,283		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	21.460	509.786	214,598		<b>Total</b>			<b>100.00</b>
Silver	7440-22-4	Lead Frame	0.417	9.911	4,172	520.24	(mg) Total	Lead Frame	% of Total Weight	21.9
Zirconium	7440-67-7	Lead Frame	0.022	0.520	219		Copper	7440-50-8	97.99	
Manganese	7439-96-5	Lead Frame	0.001	0.026	11		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.104	2.461	1,036		Zirconium	7440-67-7	0.10	
Epoxy resin	Trade Secret	Die Attach	0.032	0.765	322		Manganese	7439-96-5	0.01	
Gamma-butyrolactone	96-48-0	Die Attach	0.004	0.100	42		<b>Total</b>			<b>100.00</b>
Silicon	7440-21-3	Chip (Die)	0.870	20.667	8,700	3.33	(mg) Total	Die Attach	% of Total Weight	0.14
Gold	7440-57-5	Wire Bond	0.050	1.188	500		Silver	7440-22-4	74	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	22.330	9,400		Epoxy resin	Trade Secret	23	
<b>2.3755 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>2,375.540</b>	<b>1,000,000</b>	Gamma-butyrolactone	96-48-0	3	
						<b>Total</b>			<b>100.00</b>	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						20.67	Total (mg)	Chip (Die)	% of Total Weight	0.87
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.							Doped Silicon	7440-21-3	100	
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offers/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offers/industries/chemicals/plastics/</a>						1.19	(mg) Total	Wire Bond	% of Total Weight	0.05
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.							Doped Gold	7440-57-5	100	
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Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						22.33	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.94
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.							Tin	7440-31-5	100.00	
						<b>Total</b>			<b>100.00</b>	
						2,375.540				100.000



**Semiconductor Device Type: L 68 (Lead) PLCC (W2 / WF)**

**Termination Base Alloy:  
Copper Alloy (Cu)**

**Package Homogeneous Materials:  
8.1 Electronics (e.g. pc boards, displays)**

**JEDEC 97  
Product Marking  
and/or Pkg.  
Labeling  
e3**

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	24.038	1173.054	240,380
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	1.732	84.529	17,322
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.693	33.812	6,929
Carbon Black	1333-86-4	Mold Compound	0.085	4.140	848
Copper	7440-50-8	Lead Frame	22.087	1077.843	220,869
Silver	7440-22-4	Lead Frame	0.429	20.954	4,294
Zirconium	7440-67-7	Lead Frame	0.023	1.100	225
Manganese	7439-96-5	Lead Frame	0.001	0.055	11
Silver	7440-22-4	Die Attach	9.983	487.146	99,825
Diester Resin	94-80-4	Die Attach	1.997	97.429	19,965
Functionalized Urethane Resin	72869-86-4	Die Attach	0.666	32.476	6,655
Epoxy Resin	9003-36-5	Die Attach	0.333	16.238	3,328
Epoxy Resin	13561-08-5	Die Attach	0.333	16.238	3,328
Silicon	7440-21-3	Chip (Die)	12.310	600.728	123,100
Gold	7440-57-5	Wire Bond	5.120	249.856	51,200
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	18.440	899.872	184,400
<b>TOTALS:</b>			<b>100.000</b>	<b>4,880.000</b>	<b>1,000,000</b>

(mg) Total	Mold Compound	% of Total Weight	
1380.06			28.28
<b>Total 100.00</b>			
1099.95			22.54
<b>Total 100.00</b>			
649.53			13.31
<b>Total 100.00</b>			

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Total (mg)	Chip (Die)	% of Total Weight	
600.73			12.31
<b>Total 100.00</b>			
249.86			5.12
<b>Total 100.00</b>			
899.87			18.44
<b>Total 100.00</b>			

**4,880.000** **100.000**



Semiconductor Device Type: MG 16 (Lead) QFN 3x3x0.9mm (P9)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3		
<b>Basic Substance</b>				<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>13.79 (mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>63.82</b>
Silica, fused	60676-86-0	Mold Compound	57.438	12.407	574,380	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00			
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	3.095	0.669	30,953		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85			
Phenolic Resin	Trade Secret	Mold Compound	3.095	0.669	30,953		Phenolic Resin	Trade Secret	4.85			
Carbon Black	1333-86-4	Mold Compound	0.191	0.041	1,915		Carbon Black	1333-86-4	0.30			
Copper	7440-50-8	Lead Frame	22.289	4.814	222,889		<b>Total</b>			<b>100.00</b>		
Iron	7439-89-6	Lead Frame	0.548	0.118	5,483	<b>5.04 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>23.33</b>			
Silver	7440-22-4	Lead Frame	0.444	0.096	4,444	Copper	7440-50-8	95.54				
Zinc	7440-66-6	Lead Frame	0.029	0.006	292	Iron	7439-89-6	2.35				
Phosphorous	7723-14-0	Lead Frame	0.019	0.004	192	Silver	7440-22-4	1.91				
Silver	7440-22-4	Die Attach	0.273	0.059	2,730	Zinc	7440-66-6	0.13				
Acrylate resins Proprietary	Trade Secret	Die Attach	0.063	0.014	630	Phosphorous	7723-14-0	0.08				
Treated silica	Trade Secret	Die Attach	0.007	0.002	70	<b>Total</b>			<b>100.00</b>			
Heterocyclic organic compound	Trade Secret	Die Attach	0.007	0.002	70	<b>0.08 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.35</b>			
Silicon	7440-21-3	Chip (Die)	5.350	1.156	53,500	Silver	7440-22-4	78				
Gold	7440-57-5	Wire Bond	1.840	0.397	18,400	Acrylate resins Proprietary	Trade Secret	18				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	5.310	1.147	53,100	Treated silica	Trade Secret	2				
<b>TOTALS:</b>			<b>100.000</b>	<b>21.600</b>	<b>1,000,000</b>	Heterocyclic organic compound	Trade Secret	2				
<b>0.0216 g Total Mass</b>						<b>Total</b>			<b>100.00</b>			
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).												
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.												
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The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.												
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<b>1.16 Total (mg)</b>				<b>Chip (Die)</b>		<b>% of Total Weight</b>		<b>5.35</b>				
Doped Silicon				7440-21-3		100		Total 100.00				
<b>0.40 (mg) Total</b>				<b>Wire Bond</b>		<b>% of Total Weight</b>		<b>1.84</b>				
Doped Gold				7440-57-5		100		Total 100.00				
<b>1.15 (mg) Total</b>				<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>		<b>% of Total Weight</b>		<b>5.31</b>				
Tin				7440-31-5		100.00		Total 100.00				
<b>21.600</b>				<b>Total</b>		<b>100.00</b>		<b>100.000</b>				



Semiconductor Device Type: ML 16 (Lead) QFN 4x4mm (D5 / DS)					
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, fused	60676-86-0	Mold Compound	42.075	17.545	420,750
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.267	0.945	22,674
Phenolic Resin	Trade Secret	Mold Compound	2.267	0.945	22,674
Carbon Black	1333-86-4	Mold Compound	0.140	0.058	1,403
Copper	7440-50-8	Lead Frame	38.511	16.059	385,112
Iron	7439-89-6	Lead Frame	0.947	0.395	9,473
Silver	7440-22-4	Lead Frame	0.768	0.320	7,679
Zinc	7440-66-6	Lead Frame	0.050	0.021	504
Phosphorous	7723-14-0	Lead Frame	0.033	0.014	333
Silver	7440-22-4	Die Attach	1.022	0.426	10,218
Acrylate resins Proprietary	Trade Secret	Die Attach	0.236	0.098	2,358
Treated silica	Trade Secret	Die Attach	0.026	0.011	262
Heterocyclic organic compound	Trade Secret	Die Attach	0.026	0.011	262
Silicon	7440-21-3	Chip (Die)	7.890	3.290	78,900
Gold	7440-57-5	Wire Bond	0.790	0.329	7,900
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	1.230	29,500
<b>TOTALS:</b>			<b>100.000</b>	<b>41.700</b>	<b>1,000,000</b>
<b>0.0417 g Total Mass</b>					

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

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Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			19.49 (mg) Total			46.75
			Mold Compound		% of Total Weight	
			Epoxy Resin (NLP # 500-033-5)		90.00	
			Silica, fused		60676-86-0	
			Phenolic Resin		Trade Secret	
			Carbon Black		1333-86-4	
			Total		100.00	
			16.81 (mg) Total			40.31
			Lead Frame		% of Total Weight	
			Copper		7440-50-8	
			Iron		7439-89-6	
			Silver		7440-22-4	
			Zinc		7440-66-6	
			Phosphorous		7723-14-0	
			Total		100.00	
			0.55 (mg) Total			1.31
			Die Attach		% of Total Weight	
			Silver		7440-22-4	
			Acrylate resins Proprietary		Trade Secret	
			Treated silica		Trade Secret	
			Heterocyclic organic compound		Trade Secret	
			Total		100.00	
			3.29 Total (mg)		7.89	
			Chip (Die)		% of Total Weight	
			7440-21-3		100	
			Total		100.00	
			0.33 (mg) Total		0.79	
			Wire Bond		% of Total Weight	
			JGPSSI (D02)		7440-57-5	
			Total		100.00	
			1.23 (mg) Total		2.95	
			Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		% of Total Weight	
			7440-31-5		100.00	
			Total		100.00	
			41.700			100.000



Semiconductor Device Type: <b>ML 20</b> (Lead) QFN 4x4mm (G4 / GM)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, fused	60676-86-0	Mold Compound	46.611	20.080	466,110	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.512	1.082	25,118		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.512	1.082	25,118		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.155	0.067	1,554		Carbon Black	1333-86-4	0.30	
							<b>Total</b>			<b>100.00</b>
Copper	7440-50-8	Lead Frame	36.404	15.683	364,040	16.10	<b>(mg) Total</b>		37.37	
Tin	7440-31-5	Lead Frame	0.093	0.040	934		<b>Lead Frame</b>			
Silver	7440-22-4	Lead Frame	0.712	0.307	7,119		Copper	7440-50-8		97.42
Zinc	7440-66-6	Lead Frame	0.067	0.029	673		Tin	7440-31-5		0.25
Chromium	7440-47-3	Lead Frame	0.093	0.040	934		Silver	7440-22-4		1.91
Silver	7440-22-4	Die Attach	1.053	0.454	10,530		Zinc	7440-66-6		0.18
Acrylate resins Proprietary	Trade Secret	Die Attach	0.243	0.105	2,430		Chromium	7440-47-3		0.25
Treated silica	Trade Secret	Die Attach	0.027	0.012	270	<b>Total</b>			<b>100.00</b>	
Heterocyclic organic compound	Trade Secret	Die Attach	0.027	0.012	270	0.58	<b>(mg) Total</b>		1.35	
Silicon	7440-21-3	Chip (Die)	4.410	1.900	44,100		<b>Die Attach</b>			
Gold	7440-57-5	Wire Bond	0.640	0.276	6,400		Silver	7440-22-4		78
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.440	1.913	44,400		Acrylate resins Proprietary	Trade Secret		18
<b>TOTALS:</b>			<b>100.000</b>	<b>43.080</b>	<b>1,000,000</b>		Treated silica	Trade Secret		2
<b>0.04308 g Total Mass</b>						<b>Total</b>			<b>100.00</b>	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						1.90	<b>Total (mg)</b>		4.41	
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.							<b>Chip (Die)</b>			
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The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.						0.28	<b>(mg) Total</b>		0.64	
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						Tin		7440-31-5	100.00	
						<b>Total</b>			<b>100.00</b>	
						43.080			100.000	



Semiconductor Device Type: MQ 20 (Lead) QFN 5x5x0.9mm (P8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	35.52	(mg) Total	Mold Compound	% of Total Weight	52.91	
Silica, fused	60676-86-0	Mold Compound	47.619	31.967	476,190	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.566	1.723	25,661		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.566	1.723	25,661		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.159	0.107	1,587		Carbon Black	1333-86-4	0.30		
						<b>Total</b>			<b>100.00</b>		
Copper	7440-50-8	Lead Frame	35.362	23.738	353,616	24.37	<b>(mg) Total</b>		<b>Lead Frame</b>	<b>% of Total Weight</b>	36.3
Tin	7440-31-5	Lead Frame	0.091	0.061	908		Copper	7440-50-8	97.42		
Silver	7440-22-4	Lead Frame	0.692	0.464	6,915		Tin	7440-31-5	0.25		
Zinc	7440-66-6	Lead Frame	0.065	0.044	653		Silver	7440-22-4	1.91		
Chromium	7440-47-3	Lead Frame	0.091	0.061	908		Zinc	7440-66-6	0.18		
Silver	7440-22-4	Die Attach	1.412	0.948	14,118		Chromium	7440-47-3	0.25		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.326	0.219	3,258	<b>Total</b>			<b>100.00</b>		
Treated silica	Trade Secret	Die Attach	0.036	0.024	362	<b>(mg) Total</b>		<b>Die Attach</b>	<b>% of Total Weight</b>	1.81	
Heterocyclic organic compound	Trade Secret	Die Attach	0.036	0.024	362	1.22	Silver	7440-22-4	78		
Silicon	7440-21-3	Chip (Die)	4.160	2.793	41,600	Acrylate resins Proprietary	Trade Secret	18			
Gold	7440-57-5	Wire Bond	0.540	0.363	5,400	Treated silica	Trade Secret	2			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.280	2.873	42,800	Heterocyclic organic compound	Trade Secret	2			
<b>TOTALS:</b>						<b>100.000</b>	<b>67.130</b>	<b>1,000,000</b>	<b>Total</b>		<b>100.00</b>
<b>0.06713 g Total Mass</b>											
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.											
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a>											
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.											
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						2.79	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>4.16</b>	
							Doped Silicon	7440-21-3	100		
						<b>Total</b>			<b>100.00</b>		
						0.36	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.54</b>	
							Doped Gold	7440-57-5	100		
						<b>Total</b>			<b>100.00</b>		
						2.87	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>4.28</b>	
							Tin	7440-31-5	100.00		
						<b>Total</b>			<b>100.00</b>		
						<b>67.130</b>				<b>100.000</b>	



Semiconductor Device Type: <b>ML 28</b> (Lead) <b>QFN</b> 6x6 mm (M4/MM)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, fused	60676-86-0	Mold Compound	46.737	47.485	467,370	52.76 (mg) Total			51.93	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2.559	25,186	Mold Compound				
Phenolic Resin	Trade Secret	Mold Compound	2.519	2.559	25,186	Silica, fused 60676-86-0 90.00				
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558	Epoxy Resin (NLP # 500-033-5) Trade Secret 4.85				
Copper	7440-50-8	Lead Frame	37.885	38.491	378,847	Phenolic Resin Trade Secret 4.85				
Tin	7440-31-5	Lead Frame	0.097	0.099	972	Carbon Black 1333-86-4 0.30				
Silver	7440-22-4	Lead Frame	0.741	0.753	7,409	Total 100.00				
Zinc	7440-66-6	Lead Frame	0.070	0.071	700	39.51 (mg) Total			38.89	
Chromium	7440-47-3	Lead Frame	0.097	0.099	972	Lead Frame				
Silver	7440-22-4	Die Attach	0.413	0.420	4,134	Copper 7440-50-8 97.42				
Acrylate resins Proprietary	Trade Secret	Die Attach	0.095	0.097	954	Tin 7440-31-5 0.25				
Treated silica	Trade Secret	Die Attach	0.011	0.011	106	Silver 7440-22-4 1.91				
Heterocyclic organic compound	Trade Secret	Die Attach	0.011	0.011	106	Zinc 7440-66-6 0.18				
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900	Chromium 7440-47-3 0.25				
Gold	7440-57-5	Wire Bond	0.950	0.965	9,500	Total 100.00				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100	0.54 (mg) Total			0.53	
<b>TOTALS: 100.000 101.600 1,000,000</b>										
<b>0.1016 g Total Mass</b>										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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						3.34 Total (mg)			3.29	
						Doped Silicon 7440-21-3 100				
						Total 100.00				
						0.97 (mg) Total			0.95	
						Doped Gold 7440-57-5 100				
						Total 100.00				
						4.48 (mg) Total			4.41	
						Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour				
						Tin 7440-31-5 100.00				
						Total 100.00				
						101.600			100.000	





Semiconductor Device Type: ML or MM 28 (Lead) QFN-S 6x6mm (M2/MB)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, fused	60676-86-0	Mold Compound	46.746	47.494	467,460				51.94	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.519	2,559	25,191					
Phenolic Resin	Trade Secret	Mold Compound	2.519	2,559	25,191					
Carbon Black	1333-86-4	Mold Compound	0.156	0.158	1,558					
Copper	7440-50-8	Lead Frame	37.145	37,739	371,450					
Iron	7439-89-6	Lead Frame	0.914	0.928	9,137					
Silver	7440-22-4	Lead Frame	0.741	0.753	7,407					
Zinc	7440-66-6	Lead Frame	0.049	0.049	486					
Phosphorous	7723-14-0	Lead Frame	0.032	0.033	321					
Silver	7440-22-4	Die Attach	0.391	0.397	3,911					
Epoxy Resin	9003-36-5	Die Attach	0.100	0.101	996					
t-Butyl phenyl glycidyl ether	3101-60-8	Die Attach	0.033	0.034	334					
Phenolic hardener	92-88-6	Die Attach	0.002	0.002	16					
Butyl cellosolve acetate	112-07-2	Die Attach	0.004	0.004	42					
Silicon	7440-21-3	Chip (Die)	3.290	3.343	32,900					
Gold	7440-57-5	Wire Bond	0.950	0.965	9,500					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	4.410	4.481	44,100					
<b>TOTALS:</b>			<b>100.000</b>	<b>101.600</b>	<b>1,000,000</b>					

0.1016 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Termination Base Alloy: Copper Alloy (Cu)		Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
52.77	(mg) Total	Mold Compound	% of Total Weight	51.94	
		Silica, fused	90.00		
		Epoxy Resin (NLP # 500-033-5)	4.85		
		Phenolic Resin	4.85		
		Carbon Black	0.30		
		<b>Total</b>	<b>100.00</b>		
39.50	(mg) Total	Lead Frame	% of Total Weight	38.88	
		Copper	95.54		
		Iron	2.35		
		Silver	1.91		
		Zinc	0.13		
		Phosphorous	0.08		
		<b>Total</b>	<b>100.00</b>		
0.54	(mg) Total	Die Attach	% of Total Weight	0.53	
		Silver	74		
		Epoxy Resin	19		
		t-Butyl phenyl glycidyl ether	6		
		Phenolic hardener	0		
		Butyl cellosolve acetate	1		
		<b>Total</b>	<b>100.00</b>		
3.34	Total (mg)	Chip (Die)	% of Total Weight	3.29	
		Doped Silicon	100		
		<b>Total</b>	<b>100.00</b>		
0.97	(mg) Total	Wire Bond	% of Total Weight	0.95	
		Doped Gold	100		
		<b>Total</b>	<b>100.00</b>		
4.48	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	4.41	
		Tin	100.00		
		<b>Total</b>	<b>100.00</b>		
101.600				100.000	



Semiconductor Device Type: ML 40 (Lead) QFN 6x6x0.9mm (S3)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, fused	60676-86-0	Mold Compound	40.536	40.941	405,360	45.49	Epoxy Resin (NLP # 500-033-5)	90.00	45.04	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.184	2.206	21,844					
Phenolic Resin	Trade Secret	Mold Compound	2.184	2.206	21,844					
Carbon Black	1333-86-4	Mold Compound	0.135	0.136	1,351					
Copper	7440-50-8	Lead Frame	46.925	47.394	469,248	48.65	Lead Frame	100.00	48.17	
Tin	7440-31-5	Lead Frame	0.120	0.122	1,204					
Silver	7440-22-4	Lead Frame	0.918	0.927	9,176	0.29	Die Attach	100.00	0.29	
Zinc	7440-66-6	Lead Frame	0.087	0.088	867					
Chromium	7440-47-3	Lead Frame	0.120	0.122	1,204					
Silver	7440-22-4	Die Attach	0.226	0.228	2,262					
Acrylate resins Proprietary	Trade Secret	Die Attach	0.052	0.053	522					
Treated silica	Trade Secret	Die Attach	0.006	0.006	58					
Heterocyclic organic compound	Trade Secret	Die Attach	0.006	0.006	58	0.29	Chip (Die)	100.00	0.29	
Silicon	7440-21-3	Chip (Die)	2.720	2.747	27,200					
Gold	7440-57-5	Wire Bond	0.860	0.869	8,600					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.920	2.949	29,200					
<b>TOTALS:</b>			<b>100.000</b>	<b>101.000</b>	<b>1,000,000</b>					
<b>0.1010 g Total Mass</b>										
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						45.49	(mg) Total	Mold Compound	% of Total Weight	45.04
						48.65	(mg) Total	Lead Frame	% of Total Weight	48.17
						0.29	(mg) Total	Die Attach	% of Total Weight	0.29
						2.75	Total (mg)	Chip (Die)	% of Total Weight	2.72
						0.87	(mg) Total	Wire Bond	% of Total Weight	0.86
						2.95	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.92
						101.000	Total			100.000



Semiconductor Device Type: <b>ML 44 (Lead) QFN</b> 8x8x0.9 mm (T3 / TR)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	75.12	(mg) Total	Mold Compound	% of Total Weight	39.87	
Silica, fused	60676-86-0	Mold Compound	35.883	67.604	358,830	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00	39.87	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.934	3.643	19,337		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	1.934	3.643	19,337		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.120	0.225	1,196		Carbon Black	1333-86-4	0.30		
							<b>Total</b>				<b>100.00</b>
Copper	7440-50-8	Lead Frame	47.903	90.248	479,025	94.46	(mg) Total	Lead Frame	% of Total Weight	50.14	
Iron	7439-89-6	Lead Frame	1.178	2.220	11,783		Copper	7440-50-8	95.54		
Silver	7440-22-4	Lead Frame	0.955	1.800	9,552		Iron	7439-89-6	2.35		
Zinc	7440-66-6	Lead Frame	0.063	0.118	627		Silver	7440-22-4	1.91		
Phosphorous	7723-14-0	Lead Frame	0.041	0.078	414		Zinc	7440-66-6	0.13		
Silver	7440-22-4	Die Attach	1.186	2.234	11,856	Phosphorous	7723-14-0	0.08	<b>Total</b> <b>100.00</b>		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.274	0.515	2,736	2.86	(mg) Total	Die Attach	% of Total Weight	1.52	
Treated silica	Trade Secret	Die Attach	0.030	0.057	304		Silver	7440-22-4	78		
Heterocyclic organic compound	Trade Secret	Die Attach	0.030	0.057	304		Acrylate resins Proprietary	Trade Secret	18		
Silicon	7440-21-3	Chip (Die)	4.280	8.064	42,800		Treated silica	Trade Secret	2		
Gold	7440-57-5	Wire Bond	0.480	0.904	4,800		Heterocyclic organic compound	Trade Secret	2		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.710	6.990	37,100	<b>TOTALS:</b>			<b>100.000</b>	<b>188.400</b>	<b>1,000,000</b>
<b>0.1884 g Total Mass</b>											
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						8.06	Total (mg)	Chip (Die)	% of Total Weight	4.28	
							Doped Silicon	7440-21-3	100		
						<b>Total</b>			<b>100.00</b>		
						0.90	(mg) Total	Wire Bond	% of Total Weight	0.48	
							Doped Gold	7440-57-5	100		
						<b>Total</b>			<b>100.00</b>		
						6.99	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.71	
							Tin	7440-31-5	100.00		
						<b>Total</b>			<b>100.00</b>		
						<b>188.400</b>				<b>100.000</b>	



Semiconductor Device Type: MR 64 (Lead) QFN 9x9x0.9mm (R4)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, fused	60676-86-0	Mold Compound
Epoxy Resin	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Tin	7440-31-5	Lead Frame
Silver	7440-22-4	Lead Frame
Zinc	7440-66-6	Lead Frame
Chromium	7440-47-3	Lead Frame
Silver	7440-22-4	Die Attach
Acrylate resins Proprietary	Trade Secret	Die Attach
Treated silica	Trade Secret	Die Attach
Heterocyclic organic compound	Trade Secret	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
<b>TOTALS:</b>		
<b>0.2324 g Total Mass</b>		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
4.032	9.370	40,320
0.217	0.505	2,173
0.217	0.505	2,173
0.013	0.031	134
40.914	95.085	409,143
0.105	0.244	1,050
0.800	1.859	8,001
0.076	0.176	756
0.105	0.244	1,050
1.888	4.387	18,876
0.436	1.012	4,356
0.048	0.112	484
0.048	0.112	484
6.000	13.944	60,000
0.970	2.254	9,700
44.130	102.558	441,300
<b>100.000</b>	<b>232.400</b>	<b>1,000,000</b>

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																		
(mg) Total	Mold Compound	% of Total Weight																			
10.41			4.48																		
<table border="1"> <tr> <td>Silica, fused</td> <td>60676-86-0</td> <td>90.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>4.85</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>4.85</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Silica, fused	60676-86-0	90.00	Epoxy Resin	Trade Secret	4.85	Phenolic Resin	Trade Secret	4.85	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>				
Silica, fused	60676-86-0	90.00																			
Epoxy Resin	Trade Secret	4.85																			
Phenolic Resin	Trade Secret	4.85																			
Carbon Black	1333-86-4	0.30																			
<b>Total</b>		<b>100.00</b>																			
97.61			42																		
<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>97.42</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>0.25</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.91</td> </tr> <tr> <td>Zinc</td> <td>7440-66-6</td> <td>0.18</td> </tr> <tr> <td>Chromium</td> <td>7440-47-3</td> <td>0.25</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Copper	7440-50-8	97.42	Tin	7440-31-5	0.25	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.18	Chromium	7440-47-3	0.25	<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	97.42																			
Tin	7440-31-5	0.25																			
Silver	7440-22-4	1.91																			
Zinc	7440-66-6	0.18																			
Chromium	7440-47-3	0.25																			
<b>Total</b>		<b>100.00</b>																			
5.62			2.42																		
<table border="1"> <tr> <td>Silver</td> <td>7440-22-4</td> <td>78</td> </tr> <tr> <td>Acrylate resins Proprietary</td> <td>Trade Secret</td> <td>18</td> </tr> <tr> <td>Treated silica</td> <td>Trade Secret</td> <td>2</td> </tr> <tr> <td>Heterocyclic organic compound</td> <td>Trade Secret</td> <td>2</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Silver	7440-22-4	78	Acrylate resins Proprietary	Trade Secret	18	Treated silica	Trade Secret	2	Heterocyclic organic compound	Trade Secret	2	<b>Total</b>		<b>100.00</b>				
Silver	7440-22-4	78																			
Acrylate resins Proprietary	Trade Secret	18																			
Treated silica	Trade Secret	2																			
Heterocyclic organic compound	Trade Secret	2																			
<b>Total</b>		<b>100.00</b>																			
13.94			6																		
<table border="1"> <tr> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>													
Doped Silicon	7440-21-3	100																			
<b>Total</b>		<b>100.00</b>																			
2.25			0.97																		
<table border="1"> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>													
Doped Gold	7440-57-5	100																			
<b>Total</b>		<b>100.00</b>																			
102.56			44.13																		
<table border="1"> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>													
Tin	7440-31-5	100.00																			
<b>Total</b>		<b>100.00</b>																			
<b>232.400</b>			<b>100.000</b>																		

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Semiconductor Device Type: MJ 24 (Lead) QFN 4x4mm (J3)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, fused	60676-86-0	Mold Compound
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Tin	7440-31-5	Lead Frame
Silver	7440-22-4	Lead Frame
Zinc	7440-66-6	Lead Frame
Chromium	7440-47-3	Lead Frame
Silver	7440-22-4	Die Attach
Acrylate resins Proprietary	Trade Secret	Die Attach
Treated silica	Trade Secret	Die Attach
Heterocyclic organic compound	Trade Secret	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
<b>TOTALS:</b>		
<b>0.0441 g Total Mass</b>		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
43.902	19.374	439.020
2.366	1.044	23.658
2.366	1.044	23.658
0.146	0.065	1.463
37.193	16.413	371.930
0.095	0.042	955
0.727	0.321	7.273
0.069	0.030	687
0.095	0.042	955
0.967	0.427	9.672
0.223	0.098	2.232
0.025	0.011	248
0.025	0.011	248
6.770	2.988	67.700
0.750	0.331	7.500
4.280	1.889	42.800
<b>100.000</b>	<b>44.130</b>	<b>1,000,000</b>

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																		
(mg) Total	Mold Compound	% of Total Weight																			
21.53			48.78																		
<table border="1"> <tr> <td>Silica, fused</td> <td>60676-86-0</td> <td>90.00</td> </tr> <tr> <td>Epoxy Resin (NLP # 500-033-5)</td> <td>Trade Secret</td> <td>4.85</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>4.85</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Silica, fused	60676-86-0	90.00	Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85	Phenolic Resin	Trade Secret	4.85	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>				
Silica, fused	60676-86-0	90.00																			
Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85																			
Phenolic Resin	Trade Secret	4.85																			
Carbon Black	1333-86-4	0.30																			
<b>Total</b>		<b>100.00</b>																			
16.85			38.18																		
<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>97.42</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>0.25</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.91</td> </tr> <tr> <td>Zinc</td> <td>7440-66-6</td> <td>0.18</td> </tr> <tr> <td>Chromium</td> <td>7440-47-3</td> <td>0.25</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Copper	7440-50-8	97.42	Tin	7440-31-5	0.25	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.18	Chromium	7440-47-3	0.25	<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	97.42																			
Tin	7440-31-5	0.25																			
Silver	7440-22-4	1.91																			
Zinc	7440-66-6	0.18																			
Chromium	7440-47-3	0.25																			
<b>Total</b>		<b>100.00</b>																			
0.55			1.24																		
<table border="1"> <tr> <td>Silver</td> <td>7440-22-4</td> <td>78</td> </tr> <tr> <td>Acrylate resins Proprietary</td> <td>Trade Secret</td> <td>18</td> </tr> <tr> <td>Treated silica</td> <td>Trade Secret</td> <td>2</td> </tr> <tr> <td>Heterocyclic organic compound</td> <td>Trade Secret</td> <td>2</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Silver	7440-22-4	78	Acrylate resins Proprietary	Trade Secret	18	Treated silica	Trade Secret	2	Heterocyclic organic compound	Trade Secret	2	<b>Total</b>		<b>100.00</b>				
Silver	7440-22-4	78																			
Acrylate resins Proprietary	Trade Secret	18																			
Treated silica	Trade Secret	2																			
Heterocyclic organic compound	Trade Secret	2																			
<b>Total</b>		<b>100.00</b>																			
2.99			6.77																		
<table border="1"> <tr> <td>Chip (Die)</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Chip (Die)	7440-21-3	100	<b>Total</b>		<b>100.00</b>													
Chip (Die)	7440-21-3	100																			
<b>Total</b>		<b>100.00</b>																			
0.33			0.75																		
<table border="1"> <tr> <td>Wire Bond</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Wire Bond	7440-57-5	100	<b>Total</b>		<b>100.00</b>													
Wire Bond	7440-57-5	100																			
<b>Total</b>		<b>100.00</b>																			
1.89			4.28																		
<table border="1"> <tr> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>													
Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	7440-31-5	100.00																			
<b>Total</b>		<b>100.00</b>																			
<b>44.130</b>			<b>100.000</b>																		

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Semiconductor Device Type: QU6E 06 (Lead) UQFN 3x1.6x0.55mm (QU)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1.36	(mg) Total	Mold Compound	% of Total Weight	20.25	
Silica, fused	60676-86-0	Mold Compound	18.225	1.221	182,250			Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	0.982	0.066	9,821			Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	0.982	0.066	9,821			Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.061	0.004	608			Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	69.935	4.686	699,355						
Nickel	7440-02-0	Lead Frame	1.865	0.125	18,651						
Silicon	7440-21-3	Lead Frame	0.330	0.022	3,304						
Magnesium	7439-95-4	Lead Frame	0.073	0.005	734						
Silver	7440-22-4	Lead Frame	1.226	0.082	12,255						
Ag	7440-22-4	Die Attach	1.710	0.115	17,100						
Epoxy resin	Trade secret	Die Attach	0.342	0.023	3,420						
Aliphatic anhydride	Trade secret	Die Attach	0.114	0.008	1,140						
2-Butoxyethyl acetate	112-07-2	Die Attach	0.057	0.004	570						
Polymeric material	Trade secret	Die Attach	0.057	0.004	570						
Silicon	1303-00-0	Chip (Die)	2.120	0.142	21,200						
Doped Gold	7440-57-5	Wire Bond	0.540	0.036	5,400						
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.380	0.092	13,800						
<b>TOTALS:</b>			<b>100.000</b>	<b>6.700</b>	<b>1,000,000</b>						
<b>0.0067 g Total Mass</b>											
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						4.92	(mg) Total	Lead Frame	% of Total Weight	73.43	
								Copper	7440-50-8	95.24	
								Nickel	7440-02-0	2.54	
								Silicon	7440-21-3	0.45	
								Magnesium	7439-95-4	0.10	
								Silver	7440-22-4	1.67	
								<b>Total</b>			<b>100.00</b>
						0.15	(mg) Total	Die Attach	% of Total Weight	2.28	
								Ag	7440-22-4	75.00	
								Epoxy resin	Trade secret	15.00	
								Aliphatic anhydride	Trade secret	5.00	
								2-Butoxyethyl acetate	112-07-2	2.50	
								Polymeric material	Trade secret	3	
								<b>Total</b>			<b>100.00</b>
						0.14	(mg) Total	Chip (Die)	% of Total Weight	2.12	
								GaAs	1303-00-0	100	
								<b>Total</b>			<b>100.00</b>
						0.04	(mg) Total	Wire Bond	% of Total Weight	0.54	
								Doped Gold	7440-57-5	100.00	
								<b>Total</b>			<b>100.00</b>
						0.09	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.38	
								Tin	7440-31-5	100.00	
								<b>Total</b>			<b>100.00</b>
						6.700				100.000	



Semiconductor Device Type: QUBE 12 (Lead) UQFN 2x2x0.55mm (QM)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	1.74	(mg) Total	Mold Compound	% of Total Weight	34.08
Silica, fused	60676-86-0	Mold Compound	30.672	1.564	306.720	Epoxy Resin (NLP # 500-033-5)		Silica, fused	60676-86-0	90.00
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	1.653	0.084	16.529			Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	1.653	0.084	16.529			Phenolic Resin	Trade Secret	4.85
Carbon Black	1333-86-4	Mold Compound	0.102	0.005	1.022			Carbon Black	1333-86-4	0.30
Copper	7440-50-8	Lead Frame	43.363	2.212	433.632			<b>Total</b>		
Nickel	7440-02-0	Lead Frame	1.156	0.059	11.565	2.32	(mg) Total	Lead Frame	% of Total Weight	45.53
Silicon	7440-21-3	Lead Frame	0.205	0.010	2.049			Copper	7440-50-8	95.24
Magnesium	7439-95-4	Lead Frame	0.046	0.002	455			Nickel	7440-02-0	2.54
Silver	7440-22-4	Lead Frame	0.760	0.039	7.599			Silicon	7440-21-3	0.45
Silver	7440-22-4	Die Attach	2.256	0.115	22.560			Magnesium	7439-95-4	0.10
Epoxy Resin	Trade secret	Die Attach	0.564	0.029	5.640			Silver	7440-22-4	1.67
GaAs	1303-00-0	Chip (Die)	14.370	0.733	143.700			<b>Total</b>		
Doped Gold	7440-57-5	Wire Bond	1.060	0.054	10.600	0.14	(mg) Total	Die Attach	% of Total Weight	2.82
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.140	0.109	21.400			Silver	7440-22-4	80.00
<b>TOTALS:</b>			<b>100.000</b>	<b>5.100</b>	<b>1,000,000</b>					
<b>0.0051 g Total Mass</b>										

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offers/industries/chemicals/plastics/>

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			TOTALS:			100.000	5.100	1,000,000				
<b>0.0051 g Total Mass</b>												
						0.14	(mg) Total	Die Attach	% of Total Weight	2.82		
									Silver	7440-22-4	80.00	
									Epoxy Resin	Trade secret	20.00	
									<b>Total</b>			<b>100.00</b>
						0.73	(mg) Total	Chip (Die)	% of Total Weight	14.37		
									GaAs	1303-00-0	100	
									<b>Total</b>			<b>100.00</b>
						0.05	(mg) Total	Wire Bond	% of Total Weight	1.06		
									Doped Gold	7440-57-5	100.00	
									<b>Total</b>			<b>100.00</b>
						0.11	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.14		
									Tin	7440-31-5	100.00	
									<b>Total</b>			<b>100.00</b>
						5.100					100.000	



Semiconductor Device Type: Q3DE 20 (Lead) UQFN 3x3x0.55mm (QD)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	10.59	(mg) Total	Mold Compound	% of Total Weight	51.57
Silica, fused	60676-86-0	Mold Compound	46.413	9.529	464,130			Silica, fused	60676-86-0	90.00
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.501	0.513	25,011			Epoxy Resin	Trade Secret	4.85
Phenolic Resin	Trade Secret	Mold Compound	2.501	0.513	25,011			Phenolic Resin	Trade Secret	4.85
Carbon Black	1333-86-4	Mold Compound	0.155	0.032	1,547			Carbon Black	1333-86-4	0.30
Copper	7440-50-8	Lead Frame	39.916	8.195	399,155					
Nickel	7440-02-0	Lead Frame	1.065	0.219	10,645					
Silver	7440-22-4	Lead Frame	0.699	0.144	6,995					
Silicon	7440-21-3	Lead Frame	0.189	0.039	1,886					
Magnesium	7439-95-4	Lead Frame	0.042	0.009	419					
Silver	7440-22-4	Die Attach	0.656	0.135	6,560					
Epoxy Resin	Trade secret	Die Attach	0.164	0.034	1,640					
Silicon	7440-21-3	Chip (Die)	2.180	0.448	21,800					
Doped Gold	7440-57-5	Wire Bond	0.530	0.109	5,300					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.990	0.614	29,900					
<b>0.02053 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>20.530</b>	<b>1,000,000</b>				
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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						8.60	(mg) Total	Lead Frame	% of Total Weight	41.91
						0.17	(mg) Total	Die Attach	% of Total Weight	0.82
						0.45	(mg) Total	Chip (Die)	% of Total Weight	2.18
						0.11	(mg) Total	Wire Bond	% of Total Weight	0.53
						0.61	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.99
						20.530		Total	100.00	100.000





Semiconductor Device Type: QUCE 16 (Lead) UQFN/XDFN 3x3x0.45mm (QR)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	10.61	(mg) Total	Mold Compound	% of Total Weight	51.99
Silica, fused	60676-86-0	Mold Compound	46.791	9.545	467,910		Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	2.522	0.514	25,215		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.514	25,215		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.156	0.032	1,560		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	39.630	8.084	396,298		<b>Total</b>			<b>100.00</b>
Nickel	7440-02-0	Lead Frame	1.057	0.216	10,569	<b>8.49</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>41.61</b>
Silicon	7440-21-3	Lead Frame	0.187	0.038	1,872		Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.042	0.008	416		Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.694	0.142	6,945		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Die Attach	0.632	0.129	6,320		Magnesium	7439-95-4	0.10	
Epoxy Resin	Trade secret	Die Attach	0.158	0.032	1,580		Silver	7440-22-4	1.67	
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.170	0.443	21,700		<b>Total</b>			<b>100.00</b>
Doped Gold	7440-57-5	Wire Bond	0.490	0.100	4,900	<b>0.16</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.79</b>
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.950	0.602	29,500		Silver	7440-22-4	80.00	
<b>0.0204 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>20.400</b>	<b>1,000,000</b>	Epoxy Resin	Trade secret	20.00	
						<b>Total</b>			<b>100.00</b>	
						<b>0.44</b>	<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>2.17</b>
								Gallium arsenide	1303-00-0	100
						<b>Total</b>			<b>100.00</b>	
						<b>0.10</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.49</b>
								Doped Gold	7440-57-5	100.00
						<b>Total</b>			<b>100.00</b>	
						<b>0.60</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>2.95</b>
								Tin	7440-31-5	100.00
						<b>Total</b>			<b>100.00</b>	
						<b>20.400</b>				<b>100.000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: <b>MV 28 (Lead) UQFN 4x4x0.5mm (R6)</b>				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	11.99	(mg) Total	Mold Compound	% of Total Weight	45.93	
Silica, fused	60676-86-0	Mold Compound	41.337	10.789	413,370	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00	45.93	
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.228	0.581	22,276		Epoxy Resin (NLP # 500-033-5)	Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.228	0.581	22,276		Phenolic Resin	Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.138	0.036	1,378		Carbon Black	1333-86-4	0.30		
						<b>Total</b>			<b>100.00</b>		
Copper	7440-50-8	Lead Frame	34.095	8.899	340,953	9.14	(mg) Total	Lead Frame	% of Total Weight	35	
Tin	7440-31-5	Lead Frame	0.088	0.023	875		Copper	7440-50-8	97.42		
Silver	7440-22-4	Lead Frame	0.667	0.174	6,668		Tin	7440-31-5	0.25		
Zinc	7440-66-6	Lead Frame	0.063	0.016	630		Silver	7440-22-4	1.91		
Chromium	7440-47-3	Lead Frame	0.088	0.023	875	Zinc	7440-66-6	0.18			
Silver	7440-22-4	Die Attach	1.123	0.293	11,232	Chromium	7440-47-3	0.25			
Acrylate resins Proprietary	Trade Secret	Die Attach	0.259	0.068	2,592	<b>Total</b>			<b>100.00</b>		
Treated silica	Trade Secret	Die Attach	0.029	0.008	288	0.38	(mg) Total	Die Attach	% of Total Weight	1.44	
Heterocyclic organic compound	Trade Secret	Die Attach	0.029	0.008	288	Silver	7440-22-4	78			
Silicon	7440-21-3	Chip (Die)	8.700	2.271	87,000	Acrylate resins Proprietary	Trade Secret	18			
Gold	7440-57-5	Wire Bond	0.510	0.133	5,100	Treated silica	Trade Secret	2			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.420	2.198	84,200	Heterocyclic organic compound	Trade Secret	2			
<b>TOTALS:</b>						<b>100.000</b>	<b>26.100</b>	<b>1,000,000</b>			
<b>0.0261 g Total Mass</b>											
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						2.27	Total (mg)	Chip (Die)	% of Total Weight	8.7	
						Doped Silicon		7440-21-3	100		
						<b>Total</b>			<b>100.00</b>		
						0.13	(mg) Total	Wire Bond	% of Total Weight	0.51	
						Doped Gold		7440-57-5	100		
						<b>Total</b>			<b>100.00</b>		
						2.20	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.42	
						Tin		7440-31-5	100.00		
						<b>Total</b>			<b>100.00</b>		

26.10

100.00



Semiconductor Device Type: MV 40 (Lead) UQFN 5x5x0.5mm (S5)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	18.45	(mg) Total	Mold Compound	% of Total Weight	43.41		
Silica, fused	60676-86-0	Mold Compound	39.069	16.604	390,690	Epoxy Resin (NLP # 500-033-5)	Silica, fused	60676-86-0	90.00	43.41		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.105	0.895	21,054		Trade Secret	4.85				
Phenolic Resin	Trade Secret	Mold Compound	2.105	0.895	21,054		Phenolic Resin	Trade Secret	4.85			
Carbon Black	1333-86-4	Mold Compound	0.130	0.055	1,302		Carbon Black	1333-86-4	0.30			
							<b>Total</b>				<b>100.00</b>	
Copper	7440-50-8	Lead Frame	41.966	17.836	419,664	Copper	Copper	7440-50-8	97.42	43.08		
Tin	7440-31-5	Lead Frame	0.108	0.046	1,077		Tin	7440-31-5	0.25			
Silver	7440-22-4	Lead Frame	0.821	0.349	8,207		Silver	7440-22-4	1.91			
Zinc	7440-66-6	Lead Frame	0.078	0.033	775		Zinc	7440-66-6	0.18			
Chromium	7440-47-3	Lead Frame	0.108	0.046	1,077		Chromium	7440-47-3	0.25			
						<b>Total</b>			<b>100.00</b>			
Silver	7440-22-4	Die Attach	1.240	0.527	12,402	Heterocyclic organic compound	Silver	7440-22-4	78	1.59		
Acrylate resins Proprietary	Trade Secret	Die Attach	0.286	0.122	2,862		Acrylate resins Proprietary	Trade Secret	18			
Treated silica	Trade Secret	Die Attach	0.032	0.014	318		Treated silica	Trade Secret	2			
Heterocyclic organic compound	Trade Secret	Die Attach	0.032	0.014	318		Heterocyclic organic compound	Trade Secret	2			
							<b>Total</b>				<b>100.00</b>	
Silicon	7440-21-3	Chip (Die)	6.650	2.826	66,500	Chip (Die)	Silicon	7440-21-3	100	6.65		
Gold	7440-57-5	Wire Bond	1.540	0.655	15,400							
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.730	1.585	37,300							
			<b>TOTALS:</b>				<b>100.000</b>				<b>42.500</b>	<b>1,000,000</b>
<b>UTL / Material compilation</b>			<b>0.0425 g Total Mass</b>									
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						<b>2.83</b>			<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>6.65</b>
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.									Doped Silicon	7440-21-3	100	100.00
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.									<b>Total</b>			<b>100.00</b>
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a>						<b>0.65</b>			<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>1.54</b>
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.									Doped Gold	7440-57-5	100	100.00
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.									<b>Total</b>			<b>100.00</b>
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						<b>1.59</b>			<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>3.73</b>
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.									Tin	7440-31-5	100.00	100.00
									<b>Total</b>			<b>100.00</b>

42.50

100.00



Semiconductor Device Type: QVCE 16 (Lead) VQFN 3x3x0.9mm (CV)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
							12.83 (mg) Total			50.7
							Mold Compound			
							% of Total Weight			
							Silica, vitreous (or fused)			85.00
							Epoxy Resin			8.70
							Phenolic Resin			6.00
							Carbon Black			0.30
							Total			100.00
							11.00 (mg) Total			43.48
							Lead Frame			
							% of Total Weight			
							Copper			95.54
							Iron			2.35
							Silver			1.91
							Zinc			0.13
							Phosphorous			0.08
							Total			100.00
							0.43 (mg) Total			1.7
							Die Attach			
							% of Total Weight			
							Silver			80.00
							Epoxy Resin			20.00
							Total			100.00
							0.34 (mg) Total			1.34
							Chip (Die)			
							% of Total Weight			
							Doped GaAs			100
							Total			100.00
							0.10 (mg) Total			0.4
							Wire Bond			
							% of Total Weight			
							Doped Gold			100
							Total			100.00
							0.60 (mg) Total			2.38
							Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			
							% of Total Weight			
							Tin			100.00
							Total			100.00
							25.300			100.000

**0.0253 g Total Mass**

TOTALS: 100.000 25.300 1,000.000

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive)

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offers/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Semiconductor Device Type: NQ 72 (Lead) VQFN 3x3x0.9mm (QV)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																	
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>180.05 (mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>52.8</b>																	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	44.880	153.041	448,800	<table border="1"> <tr> <td>Silica, vitreous (or fused)</td> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>8.70</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>6.00</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td><b>Total</b></td> <td></td> <td><b>100.00</b></td> </tr> </table>	Silica, vitreous (or fused)	60676-86-0	85.00	Epoxy Resin	Trade Secret	8.70	Phenolic Resin	Trade Secret	6.00	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>					
Silica, vitreous (or fused)	60676-86-0	85.00																								
Epoxy Resin	Trade Secret	8.70																								
Phenolic Resin	Trade Secret	6.00																								
Carbon Black	1333-86-4	0.30																								
<b>Total</b>		<b>100.00</b>																								
Epoxy Resin	Trade Secret	Mold Compound	4.594	15.664	45,936																					
Phenolic Resin	Trade Secret	Mold Compound	3.168	10.803	31,680																					
Carbon Black	1333-86-4	Mold Compound	0.158	0.540	1,584																					
Copper	7440-50-8	Lead Frame	36.486	124.416	364,858																					
Iron	7439-89-6	Lead Frame	0.897	3.060	8,975	<b>130.23 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>38.19</b>																	
Silver	7440-22-4	Lead Frame	0.728	2.481	7,275	<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.54</td> </tr> <tr> <td>Iron</td> <td>7439-89-6</td> <td>2.35</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.91</td> </tr> <tr> <td>Zinc</td> <td>7440-66-6</td> <td>0.13</td> </tr> <tr> <td>Phosphorous</td> <td>7723-14-0</td> <td>0.08</td> </tr> <tr> <td><b>Total</b></td> <td></td> <td><b>100.00</b></td> </tr> </table>	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>		
Copper	7440-50-8	95.54																								
Iron	7439-89-6	2.35																								
Silver	7440-22-4	1.91																								
Zinc	7440-66-6	0.13																								
Phosphorous	7723-14-0	0.08																								
<b>Total</b>		<b>100.00</b>																								
Zinc	7440-66-6	Lead Frame	0.048	0.163	477																					
Phosphorous	7723-14-0	Lead Frame	0.032	0.107	315																					
Silver	7440-22-4	Die Attach	0.640	2.182	6,400																					
Epoxy Resin	Trade secret	Die Attach	0.160	0.546	1,600																					
Silicon	7440-21-3	Chip (Die)	5.720	19.505	57,200	<b>2.73 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.8</b>																	
Doped Gold	7440-57-5	Wire Bond	0.970	3.308	9,700	<table border="1"> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td><b>Total</b></td> <td></td> <td><b>100.00</b></td> </tr> </table>	Silver	7440-22-4	80.00	Epoxy Resin	Trade secret	20.00	<b>Total</b>		<b>100.00</b>											
Silver	7440-22-4	80.00																								
Epoxy Resin	Trade secret	20.00																								
<b>Total</b>		<b>100.00</b>																								
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.520	5.183	15,200																					
<b>TOTALS:</b>			<b>100.000</b>	<b>341.000</b>	<b>1,000,000</b>																					
<b>0.341 g Total Mass</b>																										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).																										
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						<b>19.51 (mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>5.72</b>																	
						Doped Silicon	7440-21-3	100																		
						<b>Total</b>		<b>100.00</b>																		
						<b>3.31 (mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.97</b>																	
						Doped Gold	7440-57-5	100																		
						<b>Total</b>		<b>100.00</b>																		
						<b>5.18 (mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.52</b>																	
						Tin	7440-31-5	100.00																		
						<b>Total</b>		<b>100.00</b>																		
						<b>341.000</b>			<b>100.000</b>																	



Semiconductor Device Type: QCF 16 (Lead) WQFN 3x3x0.75mm (3Q)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous (or fused)	60676-86-0	Mold Compound
Epoxy Resin	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Iron	7439-89-6	Lead Frame
Phosphorous	7723-14-0	Lead Frame
Zinc (Metal)	7440-44-0	Lead Frame
Silver	7440-22-4	Die Attach
Acrylate resins Proprietary	Trade Secret	Die Attach
Treated silica	Trade Secret	Die Attach
Heterocyclic organic compound	Trade Secret	Die Attach
Gallium arsenide	1300-00-00	Chip (Die)
Gold	7440-57-5	Wire Bond
Nickel	7440-02-0	Plating on external leads (pins)
Palladium	7440-05-03	Plating on external leads (pins)
Gold	7440-57-5	Plating on external leads (pins)
<b>TOTALS:</b>		
<b>0.0219 g Total Mass</b>		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
39.024	8.546	390,235
3.994	0.875	39,942
2.755	0.603	27,546
0.138	0.030	1,377
48.494	10.620	484,943
1.146	0.251	11,463
0.125	0.027	1,246
0.075	0.016	748
1.529	0.335	15,288
0.353	0.077	3,528
0.039	0.009	392
0.039	0.009	392
1.550	0.339	15,500
0.460	0.101	4,600
0.265	0.058	2,646
0.014	0.003	140
0.001	0.000	14
<b>100.000</b>	<b>21.900</b>	<b>1,000,000</b>

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4															
(mg) Total	Mold Compound	% of Total Weight																
10.05			45.91															
<table border="1"> <tr> <td>Silica, vitreous (or fused)</td> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>8.70</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>6.00</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Silica, vitreous (or fused)	60676-86-0	85.00	Epoxy Resin	Trade Secret	8.70	Phenolic Resin	Trade Secret	6.00	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>	
Silica, vitreous (or fused)	60676-86-0	85.00																
Epoxy Resin	Trade Secret	8.70																
Phenolic Resin	Trade Secret	6.00																
Carbon Black	1333-86-4	0.30																
<b>Total</b>		<b>100.00</b>																
10.91			49.84															
<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>97.30</td> </tr> <tr> <td>Iron</td> <td>7439-89-6</td> <td>2.30</td> </tr> <tr> <td>Phosphorous</td> <td>7723-14-0</td> <td>0.25</td> </tr> <tr> <td>Zinc (Metal)</td> <td>7440-44-0</td> <td>0.15</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Copper	7440-50-8	97.30	Iron	7439-89-6	2.30	Phosphorous	7723-14-0	0.25	Zinc (Metal)	7440-44-0	0.15	<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	97.30																
Iron	7439-89-6	2.30																
Phosphorous	7723-14-0	0.25																
Zinc (Metal)	7440-44-0	0.15																
<b>Total</b>		<b>100.00</b>																
0.43			1.96															
<table border="1"> <tr> <td>Silver</td> <td>7440-22-4</td> <td>78</td> </tr> <tr> <td>Acrylate resins Proprietary</td> <td>Trade Secret</td> <td>18</td> </tr> <tr> <td>Treated silica</td> <td>Trade Secret</td> <td>2</td> </tr> <tr> <td>Heterocyclic organic compound</td> <td>Trade Secret</td> <td>2</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Silver	7440-22-4	78	Acrylate resins Proprietary	Trade Secret	18	Treated silica	Trade Secret	2	Heterocyclic organic compound	Trade Secret	2	<b>Total</b>		<b>100.00</b>	
Silver	7440-22-4	78																
Acrylate resins Proprietary	Trade Secret	18																
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Heterocyclic organic compound	Trade Secret	2																
<b>Total</b>		<b>100.00</b>																
0.34			1.55															
<table border="1"> <tr> <td>Doped GaAs</td> <td>1300-00-00</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Doped GaAs	1300-00-00	100	<b>Total</b>		<b>100.00</b>										
Doped GaAs	1300-00-00	100																
<b>Total</b>		<b>100.00</b>																
0.10			0.46															
<table border="1"> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>										
Doped Gold	7440-57-5	100																
<b>Total</b>		<b>100.00</b>																
0.06			0.28															
<table border="1"> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>94.50</td> </tr> <tr> <td>Palladium</td> <td>7440-05-03</td> <td>5.00</td> </tr> <tr> <td>Gold</td> <td>7440-57-5</td> <td>0.50</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Nickel	7440-02-0	94.50	Palladium	7440-05-03	5.00	Gold	7440-57-5	0.50	<b>Total</b>		<b>100.00</b>				
Nickel	7440-02-0	94.50																
Palladium	7440-05-03	5.00																
Gold	7440-57-5	0.50																
<b>Total</b>		<b>100.00</b>																
21.900			100.000															

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

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Semiconductor Device Type: QDE 24 (Lead) WQFN 4x4x0.75 mm (QW)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
							17.88 (mg) Total			45.6
							Mold Compound			
							% of Total Weight			
							Epoxy Resin (NLP # 500-033-5)			
							Silica, fused			90.00
							Trade Secret			4.85
							Phenolic Resin			4.85
							Trade Secret			0.30
							Carbon Black			1333-86-4
							Total			100.00
							19.51 (mg) Total			49.78
							Lead Frame			
							% of Total Weight			
							Copper			7440-50-8
							Iron			7439-89-6
							Silver			7440-22-4
							Zinc			7440-66-6
							Phosphorous			7723-14-0
							Total			100.00
							0.43 (mg) Total			1.1
							Die Attach			
							% of Total Weight			
							Silver			7440-22-4
							Acrylate resins Proprietary			Trade Secret
							Treated silica			Trade Secret
							Heterocyclic organic compound			Trade Secret
							Total			100.00
							0.34 (mg) Total			0.87
							Chip (Die)			
							% of Total Weight			
							Gallium arsenide (GaAs)			1303-00-0
							Total			100.00
							0.15 (mg) Total			0.38
							Wire Bond			
							% of Total Weight			
							Doped Gold			7440-57-5
							Total			100.00
							0.89 (mg) Total			2.27
							Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			
							% of Total Weight			
							Tin			7440-31-5
							Total			100.00
							39.200			100.000
							0.0392 g Total Mass			
							TOTALS:			100.000
							39.200			1,000,000
							1,000,000			

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: QXBE 12 (Lead) XQFN 2x2x0.45mm (QL)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	6.10 (mg) Total	Mold Compound	% of Total Weight	60.43	
Silica, fused	60676-86-0	Mold Compound	54.387	5.493	543,870	Silica, fused Epoxy Resin Phenolic Resin Carbon Black	60676-86-0	90.00		
Epoxy Resin (NLP # 500-033-5)	Trade Secret	Mold Compound	2.931	0.296	29,309		Trade Secret	4.85		
Phenolic Resin	Trade Secret	Mold Compound	2.931	0.296	29,309		Trade Secret	4.85		
Carbon Black	1333-86-4	Mold Compound	0.181	0.018	1,813		1333-86-4	0.30		
						<b>Total</b>			<b>100.00</b>	
Copper	7440-50-8	Lead Frame	34.039	3.438	340,391	Copper Nickel Silicon Magnesium	7440-50-8 7440-02-0 7440-21-3 7439-95-4	95.24 2.54 0.45 0.10		
Nickel	7440-02-0	Lead Frame	0.908	0.092	9,078					
Silicon	7440-21-3	Lead Frame	0.161	0.016	1,608					
Magnesium	7439-95-4	Lead Frame	0.036	0.004	357					
Silver	7440-22-4	Lead Frame	0.597	0.060	5,965	Silver Epoxy Resin Gallium arsenide (GaAs) Gold	7440-22-4 Trade secret 1303-00-0 7440-57-5	1.67 0.10 0.260 80.00		
Silver	7440-22-4	Die Attach	0.904	0.091	9,040					
Epoxy Resin	Trade secret	Die Attach	0.226	0.023	2,260					
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.230	0.124	12,300					
Gold	7440-57-5	Wire Bond	0.370	0.037	3,700	<b>Total</b>			<b>100.00</b>	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	0.111	11,000	0.11 (mg) Total	Die Attach	% of Total Weight	1.13	
<b>TOTALS:</b>						<b>100.000</b>	<b>10.100</b>	<b>1,000.000</b>		
<b>0.0101 g Total Mass</b>										
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						0.12 (mg) Total	Chip (Die)	% of Total Weight	1.23	
						Gallium arsenide (GaAs)	1303-00-0	100.00		
						<b>Total</b>			<b>100.00</b>	
						0.04 (mg) Total	Wire Bond	% of Total Weight	0.37	
						Doped Gold	7440-57-5	100.00		
						<b>Total</b>			<b>100.00</b>	
						0.11 (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.1	
						Tin	7440-31-5	100.00		
						<b>Total</b>			<b>100.00</b>	
						<b>10.100</b>			<b>100.000</b>	





Semiconductor Device Type: QXCE 16 (Lead) XQFN 3x3x0.45mm (QR)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>7.94</b>	<b>(mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>44.83</b>
Silica, fused	60676-86-0	Mold Compound	40.347	7.149	403.470			Silica, fused	60676-86-0	90.00
Epoxy Resin	Trade Secret	Mold Compound	2.174	0.385	21.743			Epoxy Resin	Trade Secret	4.85
Phenolic Resin	Trade Secret	Mold Compound	2.174	0.385	21.743			Phenolic Resin	Trade Secret	4.85
Carbon Black	1333-86-4	Mold Compound	0.134	0.024	1.345			Carbon Black	1333-86-4	0.30
Copper	7440-50-8	Lead Frame	45.544	8.070	455.442					
Nickel	7440-02-0	Lead Frame	1.215	0.215	12.146					
Silicon	7440-21-3	Lead Frame	0.215	0.038	2.152					
Magnesium	7439-95-4	Lead Frame	0.048	0.008	478					
Silver	7440-22-4	Lead Frame	0.798	0.141	7.981					
Silver	7440-22-4	Die Attach	0.728	0.129	7.280					
Epoxy Resin	Trade secret	Die Attach	0.182	0.032	1.820					
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.490	0.441	24.900					
Doped Gold	7440-57-5	Wire Bond	0.560	0.099	5.600					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.390	0.601	33.900					
<b>TOTALS:</b>			<b>100.000</b>	<b>17.720</b>	<b>1,000,000</b>					
<b>0.0177 g Total Mass</b>										
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						<b>8.47</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>47.82</b>
								Copper	7440-50-8	95.24
								Nickel	7440-02-0	2.54
								Silicon	7440-21-3	0.45
								Magnesium	7439-95-4	0.10
								Silver	7440-22-4	1.67
								<b>Total</b>		<b>100.00</b>
						<b>0.16</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.91</b>
								Silver	7440-22-4	80.00
								Epoxy Resin	Trade secret	20.00
								<b>Total</b>		<b>100.00</b>
						<b>0.44</b>	<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>2.49</b>
								Gallium arsenide	1303-00-0	100
								<b>Total</b>		<b>100.00</b>
						<b>0.10</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.56</b>
								Doped Gold	7440-57-5	100.00
								<b>Total</b>		<b>100.00</b>
						<b>0.60</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>3.39</b>
								Tin	7440-31-5	100.00
								<b>Total</b>		<b>100.00</b>
						<b>17.720</b>				<b>100.000</b>



Semiconductor Device Type: QR 16 (Lead) QSOP (H5)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	48.50	(mg) Total	Mold Compound	% of Total Weight	58
Silica, vitreous	60676-86-0	Mold Compound	49.300	41.225	493,000			Silica, vitreous	60676-86-0	85.00
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.553	2.971	35,525			Epoxy Resin	Trade Secret	6.13
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.553	2.971	35,525			Phenolic Resin	Trade Secret	6.13
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.421	1.188	14,210			Epoxy, Cresol Novolac	29690-82-2	2.45
Carbon Black	1333-86-4	Mold Compound	0.174	0.145	1,740			Carbon Black	1333-86-4	0.30
Copper	7440-50-8	Lead Frame	35.893	30.014	358,934			<b>Total 100.00</b>		
Iron	7439-89-6	Lead Frame	0.883	0.738	8,829	31.42	(mg) Total	Lead Frame		37.57
Silver	7440-22-4	Lead Frame	0.716	0.598	7,157			Copper	7440-50-8	95.54
Zinc	7440-66-6	Lead Frame	0.047	0.039	470			Iron	7439-89-6	2.35
Phosphorous	7723-14-0	Lead Frame	0.031	0.026	310			Silver	7440-22-4	1.91
Silver	7440-22-4	Die Attach	0.222	0.186	2,220			Zinc	7440-66-6	0.13
Epoxy resin	Trade Secret	Die Attach	0.060	0.050	600			Phosphorous	7723-14-0	0.08
Metal oxide	Trade Secret	Die Attach	0.009	0.008	90			<b>Total 100.00</b>		
Gamma-butyrolactone	96-48-0	Die Attach	0.009	0.008	90	0.25	(mg) Total	Die Attach		0.3
Silicon	7440-21-3	Chip (Die)	1.760	1.472	17,600			Silver	7440-22-4	74
Gold	7440-57-5	Wire Bond	0.600	0.502	6,000			Epoxy resin	Trade Secret	20
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.770	1.480	17,700			Metal oxide	Trade Secret	3
<b>TOTALS:</b>			<b>100.000</b>	<b>83.620</b>	<b>1,000,000</b>			Gamma-butyrolactone	96-48-0	3
<b>0.0836 g Total Mass</b>										

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48.50		(mg) Total	Mold Compound	% of Total Weight	58
		<b>Total 100.00</b>			
31.42	(mg) Total	Lead Frame		% of Total Weight	37.57
		<b>Total 100.00</b>			
0.25	(mg) Total	Die Attach		% of Total Weight	0.3
		<b>Total 100.00</b>			
1.47	Total (mg)	Chip (Die)		% of Total Weight	1.76
		<b>Total 100.00</b>			
0.50	(mg) Total	Wire Bond		% of Total Weight	0.6
		<b>Total 100.00</b>			
1.48	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		% of Total Weight	1.77
		<b>Total 100.00</b>			
<b>83.620</b>					<b>100.000</b>



**Semiconductor Device Type: OA, SN, TC, SAE 08 (Lead) (SOIC) (Small Outline -150mil) (C2)**

**Termination Base Alloy:  
Copper Alloy (Cu)**

**Package Homogeneous Materials:  
8.1 Electronics (e.g. pc boards, displays)**

**JEDEC 97  
Product Marking  
and/or Pkg.  
Labeling  
e3**

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	69.354	54.096	693,542
Epoxy Resin	Trade Secret	Mold Compound	6.121	4.774	61,207
Phenolic Resin	Trade Secret	Mold Compound	4.078	3.181	40,778
Carbon Black	1333-86-4	Mold Compound	0.247	0.193	2,474
Copper	7440-50-8	Lead Frame	10.031	7.825	100,314
Iron	7439-89-6	Lead Frame	0.247	0.192	2,468
Silver	7440-22-4	Lead Frame	0.200	0.156	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.010	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.439	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.082	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.044	563
Modified Amine	827-43-0	Die Attach	0.026	0.020	263
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75,000
Doped Gold	7440-57-5	Wire Bond	0.200	0.156	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.975	12,500
<b>TOTALS:</b>			<b>100.000</b>	<b>78.000</b>	<b>1,000,000</b>

**0.0780 g Total Mass**

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offersings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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(mg) Total	Mold Compound	% of Total Weight	
62.24			79.8
<b>Total 100.00</b>			
8.19	Lead Frame		10.5
<b>Total 100.00</b>			
0.59	Die Attach		0.75
<b>Total 100.00</b>			
5.85	Chip (Die)		7.5
<b>Total 100.00</b>			
0.16	Wire Bond		0.2
<b>Total 100.00</b>			
0.98	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		1.25
<b>Total 100.00</b>			
<b>78.000</b>			<b>100.000</b>



Semiconductor Device Type: SAF 08 (Lead) SOIC 3.90mm(.150in) (3B)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4																	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	45.00 (mg) Total	Mold Compound	% of Total Weight	60																	
Silica, vitreous	60676-86-0	Mold Compound	51.000	38.250	510,000	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.0000</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.1250</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.1250</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.4500</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.3000</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	Silica, vitreous	60676-86-0	85.0000	Epoxy Resin	Trade Secret	6.1250	Phenolic Resin	Trade Secret	6.1250	Epoxy, Cresol Novolac	29690-82-2	2.4500	Carbon Black	1333-86-4	0.3000	<b>Total</b>		<b>100.00</b>		
Silica, vitreous	60676-86-0	85.0000																								
Epoxy Resin	Trade Secret	6.1250																								
Phenolic Resin	Trade Secret	6.1250																								
Epoxy, Cresol Novolac	29690-82-2	2.4500																								
Carbon Black	1333-86-4	0.3000																								
<b>Total</b>		<b>100.00</b>																								
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.756	36,750																					
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.675	2.756	36,750																					
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.470	1.103	14,700																					
Carbon Black	1333-86-4	Mold Compound	0.180	0.135	1,800																					
Copper	7440-50-8	Lead Frame	30.572	22.929	305,720																					
Iron	7439-89-6	Lead Frame	0.752	0.564	7,520	24.00 (mg) Total	Lead Frame	% of Total Weight	32																	
Silver	7440-22-4	Lead Frame	0.610	0.457	6,096	<table border="1"> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>		
Copper	7440-50-8	95.54																								
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Zinc	7440-66-6	0.13																								
Phosphorous	7723-14-0	0.08																								
<b>Total</b>		<b>100.00</b>																								
Zinc	7440-66-6	Lead Frame	0.040	0.030	400																					
Phosphorous	7723-14-0	Lead Frame	0.026	0.020	264																					
Silver	7440-22-4	Die Attach	0.059	0.044	592																					
Epoxy resin	Trade Secret	Die Attach	0.016	0.012	160																					
Metal oxide	Trade Secret	Die Attach	0.002	0.002	24																					
Gamma-butyrolactone	96-48-0	Die Attach	0.002	0.002	24	0.06 (mg) Total	Die Attach	% of Total Weight	0.08																	
Silicon	7440-21-3	Chip (Die)	4.820	3.615	48,200	<table border="1"> <tr><td>Silver</td><td>7440-22-4</td><td>74</td></tr> <tr><td>Epoxy resin</td><td>Trade Secret</td><td>20</td></tr> <tr><td>Metal oxide</td><td>Trade Secret</td><td>3</td></tr> <tr><td>Gamma-butyrolactone</td><td>96-48-0</td><td>3</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	Silver	7440-22-4	74	Epoxy resin	Trade Secret	20	Metal oxide	Trade Secret	3	Gamma-butyrolactone	96-48-0	3	<b>Total</b>		<b>100.00</b>					
Silver	7440-22-4	74																								
Epoxy resin	Trade Secret	20																								
Metal oxide	Trade Secret	3																								
Gamma-butyrolactone	96-48-0	3																								
<b>Total</b>		<b>100.00</b>																								
Doped Gold	7440-57-5	Wire Bond	0.100	0.075	1,000																					
Nickel	7440-02-0	Plating on external leads (pins)	2.835	2.126	28,350																					
Palladium	7440-05-03	Plating on external leads (pins)	0.150	0.113	1,500																					
Gold	7440-57-5	Plating on external leads (pins)	0.015	0.011	150																					
<b>TOTALS:</b>			<b>100.000</b>	<b>75.000</b>	<b>1,000,000</b>	3.62 (mg) Total	Chip (Die)	% of Total Weight	4.82																	
<b>0.0750 g Total Mass</b>						<table border="1"> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>														
Doped Silicon	7440-21-3	100																								
<b>Total</b>		<b>100.00</b>																								
This semiconductor device and its homogenous materials comply with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).																										
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.						0.08 (mg) Total	Wire Bond	% of Total Weight	0.1																	
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Doped Gold	7440-57-5	100.00																								
<b>Total</b>		<b>100.00</b>																								
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>																										
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.						2.25 (mg) Total	Plating on external leads (pins)	% of Total Weight	3																	
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Nickel	7440-02-0	94.50																								
Palladium	7440-05-03	5.00																								
Gold	7440-57-5	0.50																								
<b>Total</b>		<b>100.00</b>																								
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75.00

100.00



Semiconductor Device Type: SL 14 (Lead) SOIC (Small Outline - 150mil) (D3/DG)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	114.27 (mg) Total		Mold Compound	% of Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	99.315	693,542			Silica, vitreous	60676-86-0	86.91
Epoxy Resin	Trade Secret	Mold Compound	6.121	8.765	61,207			Epoxy Resin	Trade Secret	7.67
Phenolic Resin	Trade Secret	Mold Compound	4.078	5.839	40,778			Phenolic Resin	Trade Secret	5.11
Carbon Black	1333-86-4	Mold Compound	0.247	0.354	2,474			Carbon Black	1333-86-4	0.31
Copper	7440-50-8	Lead Frame	10.031	14.365	100,314			<b>Total 100.00</b>		
Iron	7439-89-6	Lead Frame	0.247	0.353	2,468	15.04 (mg) Total		Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.200	0.286	2,000			Copper	7440-50-8	95.54
Zinc	7440-66-6	Lead Frame	0.013	0.019	131			Iron	7439-89-6	2.35
Phosphorous	7723-14-0	Lead Frame	0.009	0.012	87			Silver	7440-22-4	1.91
Silver (Ag)	7440-22-4	Die Attach	0.563	0.806	5,625			Zinc	7440-66-6	0.13
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.150	1,050			Phosphorous	7723-14-0	0.08
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.081	563			<b>Total 100.00</b>		
Modified Amine	827-43-0	Die Attach	0.026	0.038	263	1.07 (mg) Total		Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	10.740	75,000			Silver (Ag)	7440-22-4	75.00
Doped Gold	7440-57-5	Wire Bond	0.200	0.286	2,000			Modified Epoxy Resin	13561-08-5	14.00
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.790	12,500			Diglycidylether of bisphenol	54208-63-8	7.50
<b>TOTALS:</b>			<b>100.000</b>	<b>143.200</b>	<b>1,000,000</b>			Modified Amine	827-43-0	3.50
<b>0.1432 g Total Mass</b>										

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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114.27 (mg) Total		Mold Compound	% of Total Weight	79.8
		<b>Total 100.00</b>		
15.04 (mg) Total		Lead Frame	% of Total Weight	10.5
		<b>Total 100.00</b>		
1.07 (mg) Total		Die Attach	% of Total Weight	0.75
		<b>Total 100.00</b>		
10.74 (mg) Total		Chip (Die)	% of Total Weight	7.5
		<b>Total 100.00</b>		
0.29 (mg) Total		Wire Bond	% of Total Weight	0.2
		<b>Total 100.00</b>		
1.79 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
		<b>Total 100.00</b>		
143.200				100.000



Semiconductor Device Type: TF, F, OE, SO, SL 16 (Lead) SOIC (Wide Outline - 300mil) (D9 / DZ)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous	60676-86-0	Mold Compound	59.662	261.317	596.615	307.43	Silica, vitreous	60676-86-0	85.00	70.19
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.299	18.830	42.991		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.299	18.830	42.991		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.720	7.532	17.197		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.211	0.922	2,106		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.499	111.685	254,990		<b>Total 100.00</b>			
Iron	7439-89-6	Lead Frame	0.627	2.747	6,272	116.90	(mg) Total	Lead Frame	% of Total Weight	26.69
Silver	7440-22-4	Lead Frame	0.508	2.227	5,084		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.033	0.146	334		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.096	220		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.370	1.621	3,700		Zinc	7440-66-6	0.13	
Epoxy resin	Trade Secret	Die Attach	0.100	0.438	1,000		Phosphorous	7723-14-0	0.08	
Metal oxide	Trade Secret	Die Attach	0.015	0.066	150	<b>Total 100.00</b>				
Gamma-butyrolactone	96-48-0	Die Attach	0.015	0.066	150	2.19	(mg) Total	Die Attach	% of Total Weight	0.5
Silicon	7440-21-3	Chip (Die)	1.850	8.103	18,500		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.090	0.394	900		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	2.978	6,800		Metal oxide	Trade Secret	3	
<b>0.4380 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>438.000</b>		<b>1,000,000</b>	Gamma-butyrolactone	96-48-0	
						<b>Total 100.00</b>				
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						8.10	Total (mg)	Chip (Die)	% of Total Weight	1.85
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.							Doped Silicon	7440-21-3	100	
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The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.							Doped Gold	7440-57-5	100	
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						<b>Total 100.00</b>				
						<b>438.000</b>				<b>100.000</b>



Semiconductor Device Type: **SL 16** (Lead) **SOIC** (Small Outline - 150mil) (D7 / DV)

Basic Substance	CAS Number	"Contained In" Sub-Component	Termination Base Alloy: Copper Alloy (Cu)		
			% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	32.402	51.001	324,020
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.335	3.675	23,349
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	0.934	1.470	9,339
Carbon Black	1333-86-4	Mold Compound	0.114	0.180	1,144
Copper	7440-50-8	Lead Frame	24.276	38.211	242,761
Iron	7439-89-6	Lead Frame	0.597	0.940	5,971
Silver	7440-22-4	Lead Frame	0.484	0.762	4,841
Zinc	7440-66-6	Lead Frame	0.032	0.050	318
Phosphorous	7723-14-0	Lead Frame	0.021	0.033	210
Silver	7440-22-4	Die Attach	2.618	4.120	26,175
Diester Resin	94-80-4	Die Attach	0.524	0.824	5,235
Functionalized Urethane Resin	72869-86-4	Die Attach	0.175	0.275	1,745
Epoxy Resin	9003-36-5	Die Attach	0.087	0.137	873
Epoxy Resin	13561-08-5	Die Attach	0.087	0.137	873
Silicon	7440-21-3	Chip (Die)	3.180	5.005	31,800
Gold	7440-57-5	Wire Bond	1.210	1.905	12,100
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	28.590	45.001	285,900
<b>TOTALS:</b>			<b>100.000</b>	<b>157.400</b>	<b>1,000,000</b>

**0.1574 g Total Mass**

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
<b>60.00</b>	<b>(mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>38.12</b>
	Silica, vitreous	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	6.13	
	Phenolic Resin	Trade Secret	6.13	
	Epoxy, Cresol Novolac	29690-82-2	2.45	
	Carbon Black	1333-86-4	0.30	
	<b>Total</b>			<b>100.00</b>
<b>40.00</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>25.41</b>
	Copper	7440-50-8	95.54	
	Iron	7439-89-6	2.35	
	Silver	7440-22-4	1.91	
	Zinc	7440-66-6	0.13	
	Phosphorous	7723-14-0	0.08	
	<b>Total</b>			<b>100.00</b>
<b>5.49</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>3.49</b>
	Silver	7440-22-4	75	
	Diester Resin	94-80-4	15	
	Functionalized Urethane Resin	72869-86-4	5	
	Epoxy Resin	9003-36-5	3	
	Epoxy Resin	13561-08-5	3	
	<b>Total</b>			<b>100.00</b>
<b>5.01</b>	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>3.18</b>
	Doped Silicon	7440-21-3	100	
	<b>Total</b>			<b>100.00</b>
<b>1.90</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>1.21</b>
	Doped Gold	7440-57-5	100	
	<b>Total</b>			<b>100.00</b>
<b>45.00</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>28.59</b>
	Tin	7440-31-5	100.00	
	<b>Total</b>			<b>100.00</b>
<b>157.400</b>				<b>100.000</b>



Semiconductor Device Type: SO 18 (Lead) SOIC (Wide Outline - 300mil) (F2 / FJ)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous	60676-86-0	Mold Compound	67.830	326,262	678,300	383.84	Silica, vitreous	60676-86-0	85.00	79.8
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23,510	48,878		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	23,510	48,878		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	9,404	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.239	1,152	2,394		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	10.031	48,251	100,314		<b>Total 100.00</b>			
Iron	7439-89-6	Lead Frame	0.247	1,187	2,468		50.51	(mg) Total	Lead Frame	
Silver	7440-22-4	Lead Frame	0.200	0,962	2,000	Copper		7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0,063	131	Iron		7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0,042	87	Silver		7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.563	2,706	5,625	Zinc		7440-66-6	0.13	
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0,505	1,050	Phosphorous		7723-14-0	0.08	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0,271	563	<b>Total 100.00</b>				
Modified Amine	827-43-0	Die Attach	0.026	0,126	263	3.61	(mg) Total	Die Attach	% of Total Weight	0.75
Silicon	7440-21-3	Chip (Die)	7.500	36,075	75,000		Copper	7440-22-4	75	
Gold	7440-57-5	Wire Bond	0.200	0,962	2,000		Modified Epoxy Resin	13561-08-5	14	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6,013	12,500		Diglycidylether of bisphenol-F	54208-63-8	8	
<b>TOTALS:</b>			<b>100.000</b>	<b>481.000</b>	<b>1,000,000</b>		Modified Amine	827-43-0	4	
<b>0.4810 g Total Mass</b>										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.										
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>										
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						36.08	Total (mg)	Chip (Die)	% of Total Weight	7.5
							Doped Silicon	7440-21-3	100	
						<b>Total 100.00</b>				
						0.96	(mg) Total	Wire Bond	% of Total Weight	0.2
							Doped Gold	7440-57-5	100	
						<b>Total 100.00</b>				
						6.01	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
							Tin	7440-31-5	100.00	
						<b>Total 100.00</b>				
						481.000				100.000





Semiconductor Device Type: SO 20 (Lead) SOIC (Wide Outline - 300mil) (G5 / GS)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous	60676-86-0	Mold Compound	61.064	330.967	610,640	389.37	Silica, vitreous 60676-86-0 Epoxy Resin Trade Secret Phenolic Resin Trade Secret Epoxy, Cresol Novolac 29690-82-2 Carbon Black 1333-86-4	85.00 6.13 6.13 2.45 0.30	71.84	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.400	23.849	44,002					
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.400	23.849	44,002					
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.760	9.540	17,601					
Carbon Black	1333-86-4	Mold Compound	0.216	1.168	2,155					
Copper	7440-50-8	Lead Frame	24.735	134.062	247,347					
Iron	7439-89-6	Lead Frame	0.608	3.298	6,084	140.32	Lead Frame	25.89		
Silver	7440-22-4	Lead Frame	0.493	2.673	4,932					
Zinc	7440-66-6	Lead Frame	0.032	0.175	324					
Phosphorous	7723-14-0	Lead Frame	0.021	0.116	214					
Silver	7440-22-4	Die Attach	0.252	1.364	2,516					
Epoxy resin	Trade Secret	Die Attach	0.068	0.369	680					
Metal oxide	Trade Secret	Die Attach	0.010	0.055	102	1.84	Die Attach	0.34		
Gamma-butyrolactone	96-48-0	Die Attach	0.010	0.055	102					
Silicon	7440-21-3	Chip (Die)	1.150	6.233	11,500					
Gold	7440-57-5	Wire Bond	0.100	0.542	1,000					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.680	3.686	6,800					
<b>TOTALS:</b>			<b>100.000</b>	<b>542.000</b>	<b>1,000,000</b>					
<b>0.5420 g Total Mass</b>						<b>100.00</b>				
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						6.23	Total (mg)	Chip (Die)	% of Total Weight	1.15
							Dope Silicon	7440-21-3	100	
							Total		100.00	
						0.54	(mg) Total	Wire Bond	% of Total Weight	0.1
							Dope Gold	7440-57-5	100	
							Total		100.00	
						3.69	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.68
							Tin	7440-31-5	100.00	
							Total		100.00	
						<b>542.000</b>				<b>100.000</b>



Semiconductor Device Type: OG 24 (Lead) SOIC (Wide Outline - 300mil) (K3 / KS)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	462.27	(mg) Total	Mold Compound	% of Total Weight	69.83																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Silica, vitreous	60676-86-0	Mold Compound	59.356	392.933	593.555	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	Total			100.00	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	Total			100.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.277	28.314	42.771	<table border="1"> <tr><td colspan="3">(mg) Total</td><td>178.48</td><td colspan="2">(mg) Total</td><td>26.96</td></tr> <tr><td colspan="3">Lead Frame</td><td></td><td colspan="2">Lead Frame</td><td></td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>Lead Frame</td><td>0.634</td><td>4.194</td><td>6.336</td><td rowspan="6"> <table border="1"> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table> </td> </tr> <tr> <td>Iron</td> <td>7439-89-6</td> <td>Lead Frame</td> <td>0.514</td> <td>3.400</td> <td>5.136</td> <td rowspan="12"> <table border="1"> <tr><td colspan="3">(mg) Total</td><td>2.91</td><td colspan="2">(mg) Total</td><td>0.44</td></tr> <tr><td colspan="3">Die Attach</td><td></td><td colspan="2">Die Attach</td><td></td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>Chip (Die)</td><td>2.010</td><td>13.306</td><td>20.100</td><td rowspan="6"> <table border="1"> <tr><td>Silver</td><td>7440-22-4</td><td>74</td></tr> <tr><td>Epoxy resin</td><td>Trade Secret</td><td>20</td></tr> <tr><td>Metal oxide</td><td>Trade Secret</td><td>3</td></tr> <tr><td>Gamma-butyrolactone</td><td>96-48-0</td><td>3</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table> </td> </tr> <tr> <td>Zinc</td> <td>7440-66-6</td> <td>Lead Frame</td> <td>0.034</td> <td>0.223</td> <td>337</td> <td rowspan="6"> <table border="1"> <tr><td colspan="3">Total (mg)</td><td>13.31</td><td colspan="2">Chip (Die)</td><td>2.01</td></tr> <tr><td colspan="3">Doped Silicon</td><td></td><td colspan="2">7440-21-3</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> </table> </td> </tr> <tr> <td>Phosphorous</td> <td>7723-14-0</td> <td>Lead Frame</td> <td>0.022</td> <td>0.147</td> <td>222</td> <td rowspan="6"> <table border="1"> <tr><td colspan="3">(mg) Total</td><td>0.60</td><td colspan="2">Wire Bond</td><td>0.09</td></tr> <tr><td colspan="3">Doped Gold</td><td></td><td colspan="2">7440-57-5</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> </table> </td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.326</td> <td>2.155</td> <td>3.256</td> <td rowspan="6"> <table border="1"> <tr><td colspan="3">(mg) Total</td><td>4.44</td><td colspan="2">Plating on external leads (pins) - 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Zinc	7440-66-6	Lead Frame	0.034	0.223	337	<table border="1"> <tr><td colspan="3">Total (mg)</td><td>13.31</td><td colspan="2">Chip (Die)</td><td>2.01</td></tr> <tr><td colspan="3">Doped Silicon</td><td></td><td colspan="2">7440-21-3</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> </table>		Total (mg)			13.31	Chip (Die)		2.01	Doped Silicon				7440-21-3		100	Total			100.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Phosphorous	7723-14-0	Lead Frame	0.022	0.147	222		<table border="1"> <tr><td colspan="3">(mg) Total</td><td>0.60</td><td colspan="2">Wire Bond</td><td>0.09</td></tr> <tr><td colspan="3">Doped Gold</td><td></td><td colspan="2">7440-57-5</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> </table>	(mg) Total			0.60	Wire Bond		0.09	Doped Gold				7440-57-5		100	Total			100.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Silver	7440-22-4	Die Attach	0.326	2.155	3.256	<table border="1"> <tr><td colspan="3">(mg) Total</td><td>4.44</td><td colspan="2">Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>0.67</td></tr> <tr><td colspan="3">Tin</td><td></td><td colspan="2">7440-31-5</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> </table>		(mg) Total			4.44	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		0.67	Tin				7440-31-5		100.00	Total			100.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Epoxy resin	Trade Secret	Die Attach	0.088	0.583	880		<table border="1"> <tr><td colspan="3">Total (mg)</td><td>662.000</td><td colspan="2">Total</td><td>100.000</td></tr> <tr><td colspan="3">Doped Silicon</td><td></td><td colspan="2">7440-21-3</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> <tr><td colspan="3">(mg) Total</td><td>0.60</td><td colspan="2">Wire Bond</td><td>0.09</td></tr> <tr><td colspan="3">Doped Gold</td><td></td><td colspan="2">7440-57-5</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> <tr><td colspan="3">(mg) Total</td><td>4.44</td><td colspan="2">Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>0.67</td></tr> <tr><td colspan="3">Tin</td><td></td><td colspan="2">7440-31-5</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> </table>	Total (mg)			662.000	Total		100.000	Doped Silicon				7440-21-3		100	Total			100.00				(mg) Total			0.60	Wire Bond		0.09	Doped Gold				7440-57-5		100	Total			100.00				(mg) Total			4.44	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		0.67	Tin				7440-31-5		100.00	Total			100.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Gold	7440-57-5	Wire Bond	0.090	0.596	900	<table border="1"> <tr><td colspan="3">Total (mg)</td><td>662.000</td><td colspan="2">Total</td><td>100.000</td></tr> <tr><td colspan="3">Doped Silicon</td><td></td><td colspan="2">7440-21-3</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> <tr><td colspan="3">(mg) Total</td><td>0.60</td><td colspan="2">Wire Bond</td><td>0.09</td></tr> <tr><td colspan="3">Doped Gold</td><td></td><td colspan="2">7440-57-5</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> <tr><td colspan="3">(mg) Total</td><td>4.44</td><td colspan="2">Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>0.67</td></tr> <tr><td colspan="3">Tin</td><td></td><td colspan="2">7440-31-5</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td><td colspan="3"></td></tr> </table>	Total (mg)			662.000	Total		100.000	Doped Silicon				7440-21-3		100	Total			100.00				(mg) Total			0.60	Wire Bond		0.09	Doped Gold				7440-57-5		100	Total			100.00				(mg) Total			4.44	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		0.67	Tin				7440-31-5		100.00	Total			100.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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Semiconductor Device Type: SO & OI 28 (Lead) SOIC (Wide Outline - 300mil) (NS / NN)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Pkg. and/or Pkg. Labeling e3		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	614.78	(mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous	60676-86-0	Mold Compound	67.830	522,562	678,300		Silica, vitreous	60676-86-0	85.00		
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	37,655	48,878		Epoxy Resin	Trade Secret	6.13		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	37,655	48,878		Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	15,062	19,551		Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.239	1,844	2,394		Carbon Black	1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	10.031	77,282	100,314		<b>Total</b>			<b>100.00</b>	
Iron	7439-89-6	Lead Frame	0.247	1,901	2,468		<b>80.89</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>
Silver	7440-22-4	Lead Frame	0.200	1,541	2,000		Copper	7440-50-8	95.54		
Zinc	7440-66-6	Lead Frame	0.013	0,101	131		Iron	7439-89-6	2.35		
Phosphorous	7723-14-0	Lead Frame	0.009	0,067	87		Silver	7440-22-4	1.91		
Silver (Ag)	7440-22-4	Die Attach	0.563	4,334	5,625		Zinc	7440-66-6	0.13		
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0,809	1,050		Phosphorous	7723-14-0	0.08		
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0,433	563		<b>Total</b>			<b>100.00</b>	
Modified Amine	827-43-0	Die Attach	0.026	0,202	263		<b>5.78</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>
Silicon	7440-21-3	Chip (Die)	7.500	57,780	75,000		Silver (Ag)	7440-22-4	75		
Gold	7440-57-5	Wire Bond	0.200	1,541	2,000		Modified Epoxy Resin	13561-08-5	14		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	9,630	12,500		Diglycidylether of bisphenol-F	54208-63-8	8		
<b>TOTALS:</b>			<b>100.000</b>	<b>770.400</b>	<b>1,000,000</b>		Modified Amine	827-43-0	4		
<b>0.7704 g Total Mass</b>											

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Pkg. and/or Pkg. Labeling e3	
614.78	(mg) Total	Mold Compound	% of Total Weight	79.8			
	Silica, vitreous	60676-86-0	85.00				
	Epoxy Resin	Trade Secret	6.13				
	Phenolic Resin	Trade Secret	6.13				
	Epoxy, Cresol Novolac	29690-82-2	2.45				
	Carbon Black	1333-86-4	0.30				
	<b>Total</b>			<b>100.00</b>			
80.89	(mg) Total	Lead Frame	% of Total Weight	10.5			
	Copper	7440-50-8	95.54				
	Iron	7439-89-6	2.35				
	Silver	7440-22-4	1.91				
	Zinc	7440-66-6	0.13				
	Phosphorous	7723-14-0	0.08				
	<b>Total</b>			<b>100.00</b>			
5.78	(mg) Total	Die Attach	% of Total Weight	0.75			
	Silver (Ag)	7440-22-4	75				
	Modified Epoxy Resin	13561-08-5	14				
	Diglycidylether of bisphenol-F	54208-63-8	8				
	Modified Amine	827-43-0	4				
	<b>Total</b>			<b>100.00</b>			
57.78	Total (mg)	Chip (Die)	% of Total Weight	7.5			
	Doped Silicon	7440-21-3	100				
	<b>Total</b>			<b>100.00</b>			
1.54	(mg) Total	Wire Bond	% of Total Weight	0.2			
	Doped Gold	7440-57-5	100				
	<b>Total</b>			<b>100.00</b>			
9.63	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25			
	Tin	7440-31-5	100.00				
	<b>Total</b>			<b>100.00</b>			
770.400							
				100.000			



Semiconductor Device Type: SM, S2AE 08 (Lead) SOIC (Small Outline-208 mil) (C3)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>99.27</b>	<b>(mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>79.8</b>	
Silica, vitreous	60676-86-0	Mold Compound	67.830	84.381	678.300			Silica, vitreous 60676-86-0	85.00		
Epoxy Resin	Trade Secret	Mold Compound	4.888	6.080	48.878			Epoxy Resin Trade Secret	6.13		
Phenolic Resin	Trade Secret	Mold Compound	4.888	6.080	48.878			Phenolic Resin Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	2.432	19.551			Epoxy, Cresol Novolac 29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.239	0.298	2.394			Carbon Black 1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	10.031	12.479	100.314						
Iron	7439-89-6	Lead Frame	0.247	0.307	2.468						
Silver	7440-22-4	Lead Frame	0.200	0.249	2.000						
Zinc	7440-66-6	Lead Frame	0.013	0.016	131						
Phosphorous	7723-14-0	Lead Frame	0.009	0.011	87						
Silver (Ag)	7440-22-4	Die Attach	0.563	0.700	5.625						
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.131	1,050						
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.070	563						
Modified Amine	827-43-0	Die Attach	0.026	0.033	263						
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75,000						
Doped Gold	7440-57-5	Wire Bond	0.200	0.249	2,000						
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.555	12,500						
<b>TOTALS:</b>			<b>100.000</b>	<b>124.400</b>	<b>1,000,000</b>						
<b>0.1244 g Total Mass</b>											
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						<b>13.06</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>	
								Copper 7440-50-8	95.54		
								Iron 7439-89-6	2.35		
								Silver 7440-22-4	1.91		
								Zinc 7440-66-6	0.13		
								Phosphorous 7723-14-0	0.08		
								<b>Total</b>	<b>100.00</b>		
						<b>0.93</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>	
								Silver (Ag) 7440-22-4	75		
								Modified Epoxy Resin 13561-08-5	14		
								Diglycidylether of bisphenol-F 54208-63-8	8		
								Modified Amine 827-43-0	4		
								<b>Total</b>	<b>100.00</b>		
						<b>9.33</b>	<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.5</b>	
								Doped Silicon 7440-21-3	100		
								<b>Total</b>	<b>100.00</b>		
						<b>0.25</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.2</b>	
								Doped Gold 7440-57-5	100		
								<b>Total</b>	<b>100.00</b>		
						<b>1.56</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.25</b>	
								Tin 7440-31-5	100.00		
								<b>Total</b>	<b>100.00</b>		
						<b>124.400</b>					<b>100.000</b>



**Semiconductor Device Type: CB and NB and TT 03 (Lead) SOT-23 (C6 / CV / M7)**

Basic Substance	CAS Number	"Contained In" Sub-Component	Termination Base Alloy: Copper Alloy (Cu)		
			% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	67.830	5.630	678,300
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48,878
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.406	48,878
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.162	19,551
Carbon Black	1333-86-4	Mold Compound	0.239	0.020	2,394
Copper	7440-50-8	Lead Frame	10.031	0.833	100,314
Iron	7439-89-6	Lead Frame	0.247	0.020	2,468
Silver	7440-22-4	Lead Frame	0.200	0.017	2,000
Zinc	7440-66-6	Lead Frame	0.013	0.001	131
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87
Silver (Ag)	7440-22-4	Die Attach	0.563	0.047	5,625
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.009	1,050
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.005	563
Modified Amine	827-43-0	Die Attach	0.026	0.002	263
Silicon	7440-21-3	Chip (Die)	7.500	0.623	75,000
Gold	7440-57-5	Wire Bond	0.200	0.017	2,000
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.104	12,500
<b>TOTALS:</b>			<b>100.000</b>	<b>8.300</b>	<b>1,000,000</b>

**0.0083 g Total Mass**

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.

Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.

Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																		
6.62	(mg) Total	Mold Compound	% of Total Weight 79.8																		
		<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>	
Silica, vitreous	60676-86-0	85.00																			
Epoxy Resin	Trade Secret	6.13																			
Phenolic Resin	Trade Secret	6.13																			
Epoxy, Cresol Novolac	29690-82-2	2.45																			
Carbon Black	1333-86-4	0.30																			
<b>Total</b>		<b>100.00</b>																			
0.87	(mg) Total	Lead Frame	% of Total Weight 10.5																		
		<table border="1"> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	95.54																			
Iron	7439-89-6	2.35																			
Silver	7440-22-4	1.91																			
Zinc	7440-66-6	0.13																			
Phosphorous	7723-14-0	0.08																			
<b>Total</b>		<b>100.00</b>																			
0.06	(mg) Total	Die Attach	% of Total Weight 0.75																		
		<table border="1"> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td>75</td></tr> <tr><td>Modified Epoxy Resin</td><td>13561-08-5</td><td>14</td></tr> <tr><td>Diglycidylether of bisphenol-F</td><td>54208-63-8</td><td>8</td></tr> <tr><td>Modified Amine</td><td>827-43-0</td><td>4</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Silver (Ag)	7440-22-4	75	Modified Epoxy Resin	13561-08-5	14	Diglycidylether of bisphenol-F	54208-63-8	8	Modified Amine	827-43-0	4	<b>Total</b>		<b>100.00</b>				
Silver (Ag)	7440-22-4	75																			
Modified Epoxy Resin	13561-08-5	14																			
Diglycidylether of bisphenol-F	54208-63-8	8																			
Modified Amine	827-43-0	4																			
<b>Total</b>		<b>100.00</b>																			
0.62	Total (mg)	Chip (Die)	% of Total Weight 7.5																		
		<table border="1"> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>													
Doped Silicon	7440-21-3	100																			
<b>Total</b>		<b>100.00</b>																			
0.02	(mg) Total	Wire Bond	% of Total Weight 0.2																		
		<table border="1"> <tr><td>Doped Gold</td><td>7440-57-5</td><td>100</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>													
Doped Gold	7440-57-5	100																			
<b>Total</b>		<b>100.00</b>																			
0.10	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight 1.25																		
		<table border="1"> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>													
Tin	7440-31-5	100.00																			
<b>Total</b>		<b>100.00</b>																			
<b>8.300</b>			<b>100.000</b>																		



Semiconductor Device Type: S2AF 08 (Lead) SOIJ/SOIC .208in (4B)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, vitreous	60676-86-0	Mold Compound	56.347	76.462	563.465	89.96	(mg) Total	Mold Compound	% of Total Weight	66.29
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40.603		Silica, vitreous	60676-86-0	85.00	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.060	5.510	40.603		Epoxy Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.624	2.204	16.241		Phenolic Resin	Trade Secret	6.13	
Carbon Black	1333-86-4	Mold Compound	0.199	0.270	1.989		Epoxy, Cresol Novolac	29690-82-2	2.45	
Copper	7440-50-8	Lead Frame	26.540	36.015	265.403		Carbon Black	1333-86-4	0.30	
Iron	7439-89-6	Lead Frame	0.653	0.886	6.528	37.70	Total			100.00
Silver	7440-22-4	Lead Frame	0.529	0.718	5.292		(mg) Total	Lead Frame	% of Total Weight	27.78
Zinc	7440-66-6	Lead Frame	0.035	0.047	347		Copper	7440-50-8	95.54	
Phosphorous	7723-14-0	Lead Frame	0.023	0.031	229		Iron	7439-89-6	2.35	
Silver	7440-22-4	Die Attach	0.163	0.221	1,628		Silver	7440-22-4	1.91	
Epoxy resin	Trade Secret	Die Attach	0.044	0.060	440		Zinc	7440-66-6	0.13	
Metal oxide	Trade Secret	Die Attach	0.007	0.009	66		Phosphorous	7723-14-0	0.08	
Gamma-butyrolactone	96-48-0	Die Attach	0.007	0.009	66	0.30	Total			100.00
Silicon	7440-21-3	Chip (Die)	5.410	7.341	54.100		(mg) Total	Die Attach	% of Total Weight	0.22
Gold	7440-57-5	Wire Bond	0.150	0.204	1,500		Silver	7440-22-4	74	
Nickel	7440-02-0	Plating on external leads (pins)(PPF)	0.142	0.192	1,418		Epoxy resin	Trade Secret	20	
Palladium	7440-05-03	Plating on external leads (pins)(PPF)	0.008	0.010	75		Metal oxide	Trade Secret	3	
Gold	7440-57-5	Plating on external leads (pins)(PPF)	0.001	0.001	8		Gamma-butyrolactone	96-48-0	3	
<b>0.1357 g Total Mass</b>			<b>TOTALS:</b>			100.000	135.700	1,000.000		

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4
89.96	(mg) Total	Mold Compound	% of Total Weight	66.29		
	Silica, vitreous	60676-86-0	85.00			
	Epoxy Resin	Trade Secret	6.13			
	Phenolic Resin	Trade Secret	6.13			
	Epoxy, Cresol Novolac	29690-82-2	2.45			
	Carbon Black	1333-86-4	0.30			
	Total			100.00		
37.70	(mg) Total	Lead Frame	% of Total Weight	27.78		
	Copper	7440-50-8	95.54			
	Iron	7439-89-6	2.35			
	Silver	7440-22-4	1.91			
	Zinc	7440-66-6	0.13			
	Phosphorous	7723-14-0	0.08			
	Total			100.00		
0.30	(mg) Total	Die Attach	% of Total Weight	0.22		
	Silver	7440-22-4	74			
	Epoxy resin	Trade Secret	20			
	Metal oxide	Trade Secret	3			
	Gamma-butyrolactone	96-48-0	3			
	Total			100.00		
7.34	Total (mg)	Chip (Die)	% of Total Weight	5.41		
	Doped Silicon	7440-21-3	100			
	Total			100.00		
0.20	(mg) Total	Wire Bond	% of Total Weight	0.15		
	Doped Gold	7440-57-5	100			
	Total			100.00		
0.20	(mg) Total	Plating on external leads (pins)(PPF)	% of Total Weight	0.15		
	Nickel	7440-02-0	94.50			
	Palladium	7440-05-03	5.00			
	Gold	7440-57-5	0.50			
	Total			100.00		

135.70

100



Semiconductor Device Type: CT and OT 05 (Lead) SOT-23A (M7)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm				
Silica, vitreous	60676-86-0	Mold Compound	53.729	8.006	537,285				63.21
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716				
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.872	0.577	38,716				
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.549	0.231	15,486				
Carbon Black	1333-86-4	Mold Compound	0.190	0.028	1,896				
Copper	7440-50-8	Lead Frame	27.037	4.029	270,371				
Iron	7439-89-6	Lead Frame	0.665	0.099	6,651				
Silver	7440-22-4	Lead Frame	0.539	0.080	5,391				
Zinc	7440-66-6	Lead Frame	0.035	0.005	354				
Phosphorous	7723-14-0	Lead Frame	0.023	0.003	233				
Metal oxide	Trade Secret	Die Attach	0.845	0.126	8,448				
Epoxy resins	Trade Secret	Die Attach	0.845	0.126	8,448				
Glycol ethers	Trade Secret	Die Attach	0.640	0.095	6,400				
Curing / Hardener	Trade Secret	Die Attach	0.230	0.034	2,304				
Silicon	7440-21-3	Chip (Die)	3.170	0.472	31,700				
Gold	7440-57-5	Wire Bond	0.740	0.110	7,400				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.020	0.301	20,200				
<b>TOTALS:</b>			<b>100.000</b>	<b>14.900</b>	<b>1,000,000</b>				
<b>HANA / Material compilation</b>			<b>0.0149 g Total Mass</b>						

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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9.42 (mg) Total		Mold Compound	% of Total Weight	63.21
Silica, vitreous	60676-86-0		85.00	Total 100.00
Epoxy Resin	Trade Secret		6.13	
Phenolic Resin	Trade Secret		6.13	
Epoxy, Cresol Novolac	29690-82-2		2.45	
Carbon Black	1333-86-4		0.30	
4.22 (mg) Total		Lead Frame	% of Total Weight	28.3
Copper	7440-50-8		95.54	Total 100.00
Iron	7439-89-6		2.35	
Silver	7440-22-4		1.91	
Zinc	7440-66-6		0.13	
Phosphorous	7723-14-0		0.08	
0.38 (mg) Total		Die Attach	% of Total Weight	2.56
Metal oxide	Trade Secret		33	Total 100.00
Epoxy resins	Trade Secret		33	
Glycol ethers	Trade Secret		25	
Curing / Hardener	Trade Secret		9	
0.47 Total (mg)		Chip (Die)	% of Total Weight	3.17
Doped Silicon	7440-21-3		100	Total 100.00
0.11 (mg) Total		Wire Bond	% of Total Weight	0.74
Doped Gold	7440-57-5		100	Total 100.00
0.30 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.02
Tin	7440-31-5		100.00	Total 100.00
				14.900 100.000



Semiconductor Device Type: CT and OT 05 (Lead) SOT-23 (C7)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>12.77 (mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>79.8</b>	
Silica, vitreous	60676-86-0	Mold Compound	67.830	10.853	678,300	Silica, vitreous	60676-86-0	85.00		
Epoxy Resin	Trade Secret	Mold Compound	4.888	0.782	48,878	Epoxy Resin	Trade Secret	6.13		
Phenolic Resin	Trade Secret	Mold Compound	4.888	0.782	48,878	Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.313	19,551	Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.239	0.038	2,394	Carbon Black	1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	10.031	1.605	100,314					
Iron	7439-89-6	Lead Frame	0.247	0.039	2,468					
Silver	7440-22-4	Lead Frame	0.200	0.032	2,000					
Zinc	7440-66-6	Lead Frame	0.013	0.002	131					
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87					
Silver (Ag)	7440-22-4	Die Attach	0.563	0.090	5,625					
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050					
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563					
Modified Amine	827-43-0	Die Attach	0.026	0.004	263					
Silicon	7440-21-3	Chip (Die)	7.500	1.200	75,000					
Doped Gold	7440-57-5	Wire Bond	0.200	0.032	2,000					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.200	12,500					
<b>0.0160 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>16.000</b>	<b>1,000,000</b>				
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.										
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.										
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a>										
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.										
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Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.										
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.										
						<b>1.68 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>	
						Copper	7440-50-8	95.54		
						Iron	7439-89-6	2.35		
						Silver	7440-22-4	1.91		
						Zinc	7440-66-6	0.13		
						Phosphorous	7723-14-0	0.08		
							<b>Total</b>	<b>100.00</b>		
						<b>0.12 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>	
						Silver (Ag)	7440-22-4	75		
						Modified Epoxy Resin	13561-08-5	14		
						Diglycidylether of bisphenol-F	54208-63-8	8		
						Modified Amine	827-43-0	4		
							<b>Total</b>	<b>100.00</b>		
						<b>1.20 (mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.5</b>	
						Doped Silicon	7440-21-3	100		
							<b>Total</b>	<b>100.00</b>		
						<b>0.03 (mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.2</b>	
						Doped Gold	7440-57-5	100		
							<b>Total</b>	<b>100.00</b>		
						<b>0.20 (mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.25</b>	
						Tin	7440-31-5	100.00		
							<b>Total</b>	<b>100.00</b>		
						<b>16.000</b>			<b>100.000</b>	





Semiconductor Device Type: OT 05 (Lead) SOT-23 (P6)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, vitreous	60676-86-0	Mold Compound	41.973	7.135	419,730	8.39 (mg) Total			49.38	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.025	0.514	30,245	Mold Compound				
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.025	0.514	30,245	%				
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.210	0.206	12,098	Silica, vitreous			85.00	
Carbon Black	1333-86-4	Mold Compound	0.148	0.025	1,481	Epoxy Resin			6.13	
Copper	7440-50-8	Lead Frame	40.919	6.956	409,187	Phenolic Resin			6.13	
Iron	7439-89-6	Lead Frame	1.007	0.171	10,065	Epoxy, Cresol Novolac			2.45	
Silver	7440-22-4	Lead Frame	0.816	0.139	8,159	Carbon Black			0.30	
Zinc	7440-66-6	Lead Frame	0.054	0.009	535	Total			100.00	
Phosphorous	7723-14-0	Lead Frame	0.035	0.006	353	7.28 (mg) Total			42.83	
Aluminum oxide	1344-28-1	Die Attach	0.106	0.018	1,059	Lead Frame				
Epoxy resin	Trade Secret	Die Attach	0.193	0.033	1,925	%				
Amine (Trade Secret - 10039)	(Trade Secret -	Die Attach	0.012	0.002	116	Copper			95.54	
Silicon	7440-21-3	Chip (Die)	4.380	0.745	43,800	Iron			2.35	
Gold	7440-57-5	Wire Bond	0.430	0.073	4,300	Silver			1.91	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.670	0.454	26,700	Zinc			0.13	
<b>0.0170 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>17.000</b>	<b>1,000,000</b>	Phosphorous			0.08
						Total			100.00	

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

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Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
% Total Weight	mg/part	ppm				
8.39 (mg) Total			Mold Compound	%		49.38
7.28 (mg) Total			Lead Frame	%		42.83
0.05 (mg) Total			Die Attach	%		0.31
0.74 Total (mg)			Chip (Die)	%		4.38
0.07 (mg) Total			Wire Bond	%		0.43
0.45 (mg) Total			Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	%		2.67
17.000			Total	100.00		100.000



Semiconductor Device Type: CH and OT 06 (Lead) SOT-23 (C8 / CZ)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight																				
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	678,300				79.8																			
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878																							
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.831	48,878																							
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.332	19,551																							
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394																							
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314																							
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468																							
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000																							
Zinc	7440-66-6	Lead Frame	0.013	0.002	131																							
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87																							
Epoxy resin	Trade Secret	Die Attach	0.338	0.057	3,375																							
Silicon dioxide	Trade Secret	Die Attach	0.338	0.057	3,375																							
Curing / Hardener	Trade Secret	Die Attach	0.075	0.013	750																							
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000																							
Gold	7440-57-5	Wire Bond	0.200	0.034	2,000																							
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.213	12,500																							
<b>TOTALS:</b>			<b>100.000</b>	<b>17.000</b>	<b>1,000,000</b>																							
<b>0.0170 g Total Mass</b>																												
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						13.57	(mg) Total	Mold Compound	% of Total Weight	79.8																		
						<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>			
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<b>Total</b>		<b>100.00</b>																										
						1.79	(mg) Total	Lead Frame	% of Total Weight	10.5																		
						<table border="1"> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>			
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Phosphorous	7723-14-0	0.08																										
<b>Total</b>		<b>100.00</b>																										
						0.13	(mg) Total	Die Attach	% of Total Weight	0.75																		
						<table border="1"> <tr><td>Epoxy resin</td><td>Trade Secret</td><td>45</td></tr> <tr><td>Silicon dioxide</td><td>Trade Secret</td><td>45</td></tr> <tr><td>Curing / Hardener</td><td>Trade Secret</td><td>10</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Epoxy resin	Trade Secret	45	Silicon dioxide	Trade Secret	45	Curing / Hardener	Trade Secret	10	<b>Total</b>		<b>100.00</b>									
Epoxy resin	Trade Secret	45																										
Silicon dioxide	Trade Secret	45																										
Curing / Hardener	Trade Secret	10																										
<b>Total</b>		<b>100.00</b>																										
						1.28	Total (mg)	Chip (Die)	% of Total Weight	7.5																		
						<table border="1"> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>															
Doped Silicon	7440-21-3	100																										
<b>Total</b>		<b>100.00</b>																										
						0.03	(mg) Total	Wire Bond	% of Total Weight	0.2																		
						<table border="1"> <tr><td>Doped Gold</td><td>7440-57-5</td><td>100</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>															
Doped Gold	7440-57-5	100																										
<b>Total</b>		<b>100.00</b>																										
						0.21	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25																		
						<table border="1"> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td></tr> <tr><td colspan="2" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>															
Tin	7440-31-5	100.00																										
<b>Total</b>		<b>100.00</b>																										
						17.000	<b>Total</b>		100.00	100.000																		



Semiconductor Device Type: CH and OT 06 (Lead) SOT-23 (CS)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>13.57</b>	<b>(mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>79.8</b>
Silica, vitreous	60676-86-0	Mold Compound	67.830	11.531	678,300			Silica, vitreous	60676-86-0	85.00
Epoxy Resin	Trade Secret	Mold Compound	4.888	0.831	48,878			Epoxy Resin	Trade Secret	6.13
Phenolic Resin	Trade Secret	Mold Compound	4.888	0.831	48,878			Phenolic Resin	Trade Secret	6.13
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.332	19,551			Epoxy, Cresol Novolac	29690-82-2	2.45
Carbon Black	1333-86-4	Mold Compound	0.239	0.041	2,394			Carbon Black	1333-86-4	0.30
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314					
Iron	7439-89-6	Lead Frame	0.247	0.042	2,468					
Silver	7440-22-4	Lead Frame	0.200	0.034	2,000					
Zinc	7440-66-6	Lead Frame	0.013	0.002	131					
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87					
Epoxy resin	Trade Secret	Die Attach	0.563	0.096	5,625					
Silicon dioxide	7631-86-9	Die Attach	0.169	0.029	1,688					
Curing / Hardener	Trade Secret	Die Attach	0.019	0.003	188					
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000					
Doped Gold	7440-57-5	Wire Bond	0.200	0.034	2,000					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.213	12,500					
<b>TOTALS:</b>			<b>100.000</b>	<b>17.000</b>	<b>1,000,000</b>					
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						<b>1.79</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>
								Copper	7440-50-8	95.54
								Iron	7439-89-6	2.35
								Silver	7440-22-4	1.91
								Zinc	7440-66-6	0.13
								Phosphorous	7723-14-0	0.08
								<b>Total</b>		<b>100.00</b>
						<b>0.13</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>
								Epoxy resin	Trade Secret	75
								Silicon dioxide	7631-86-9	23
								Curing / Hardener	Trade Secret	3
								<b>Total</b>		<b>100.00</b>
						<b>1.28</b>	<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.5</b>
								Doped Silicon	7440-21-3	100
								<b>Total</b>		<b>100.00</b>
						<b>0.03</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.2</b>
								Doped Gold	7440-57-5	100
								<b>Total</b>		<b>100.00</b>
						<b>0.21</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.25</b>
								Tin	7440-31-5	100.00
								<b>Total</b>		<b>100.00</b>
						<b>17.000</b>				<b>100.000</b>



Semiconductor Device Type: OT 06 (Lead) SOT-23 (6A)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
<b>0.0165 g Total Mass</b>						<b>7.94 (mg) Total</b>		<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>48.26</b>
Silica, vitreous (or fused)	60676-86-0	Mold Compound	41.021	6.748	410,210	Silica, vitreous (or fused)		60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.199	0.691	41,986	Epoxy Resin		Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.896	0.476	28,956	Phenolic Resin		Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.145	0.024	1,448	Carbon Black		1333-86-4	0.30	
						<b>Total</b>		<b>100.00</b>		
Copper	7440-50-8	Lead Frame	48.319	7.949	483,192	<b>8.17 (mg) Total</b>		<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>49.66</b>
Iron	7439-89-6	Lead Frame	1.142	0.188	11,422	Copper		7440-50-8	97.30	
Phosphorous	7723-14-0	Lead Frame	0.124	0.020	1,242	Iron		7439-89-6	2.30	
Zinc (Metal)	7440-44-0	Lead Frame	0.074	0.012	745	Phosphorous		7723-14-0	0.25	
Aluminum oxide	1344-28-1	Die Attach	0.143	0.024	1,435	Zinc (Metal)		7440-44-0	0.15	
Epoxy resin	Trade Secret	Die Attach	0.261	0.043	2,609	<b>Total</b>		<b>100.00</b>		
Amine (Trade Secret - 10039)	(Trade Secret -	Die Attach	0.016	0.003	157	<b>0.07 (mg) Total</b>		<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.42</b>
Silicon	7440-21-3	Chip (Die)	1.090	0.179	10,900	Aluminum oxide		1344-28-1	34	
Gold	7440-57-5	Wire Bond	0.120	0.020	1,200	Epoxy resin		Trade Secret	62	
Nickel	7440-02-0	Plating on external leads (pins)	0.431	0.071	4,308	Amine (Trade Secret - 10039)		Imine (Trade Secret - 1003	4	
Palladium	7440-05-03	Plating on external leads (pins)	0.015	0.002	145	<b>Total</b>		<b>100.00</b>		
Gold	7440-57-5	Plating on external leads (pins)	0.005	0.001	47	<b>0.18 Total (mg)</b>		<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>1.09</b>
						Doped Silicon		7440-21-3	100	
						<b>Total</b>		<b>100.00</b>		
						<b>0.02 (mg) Total</b>		<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.12</b>
						Doped Gold		7440-57-5	100	
						<b>Total</b>		<b>100.00</b>		
						<b>0.07 (mg) Total</b>		<b>Plating on external leads (pins)</b>	<b>% of Total Weight</b>	<b>0.45</b>
						Nickel		7440-02-0	95.73	
						Palladium		7440-05-03	3.23	
						(Gold)		7440-57-5	1.04	
						<b>Total</b>		<b>100.00</b>		
						<b>16.450</b>				<b>100.000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Semiconductor Device Type: **MB 03** (Lead) **SOT-89** (A5 / AT)

Basic Substance	CAS Number	"Contained In" Sub-Component	Termination Base Alloy: Copper Alloy (Cu)			
			% Total Weight	mg/part	ppm	
Silica, vitreous	60676-86-0	Mold Compound	46.376	24.023	463,760	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.342	1.731	33,418	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.342	1.731	33,418	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.337	0.692	13,367	
Carbon Black	1333-86-4	Mold Compound	0.164	0.085	1,637	
Copper	7440-50-8	Lead Frame	42.275	21.899	422,753	
Iron	7439-89-6	Lead Frame	1.040	0.539	10,399	
Silver	7440-22-4	Lead Frame	0.843	0.437	8,430	
Zinc	7440-66-6	Lead Frame	0.055	0.029	553	
Phosphorous	7723-14-0	Lead Frame	0.037	0.019	365	
Metal oxide	Trade Secret	Die Attach	0.102	0.053	1,023	
Epoxy resins	Trade Secret	Die Attach	0.102	0.053	1,023	
Glycol ethers	Trade Secret	Die Attach	0.078	0.040	775	
Curing / Hardener	Trade Secret	Die Attach	0.028	0.014	279	
Silicon	7440-21-3	Chip (Die)	0.410	0.212	4,100	
Gold	7440-57-5	Wire Bond	0.350	0.181	3,500	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.120	0.062	1,200	
<b>0.0518 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>51.800</b>	<b>1,000,000</b>

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
28.26	(mg) Total	Mold Compound	% of Total Weight	54.56
	Silica, vitreous	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	6.13	
	Phenolic Resin	Trade Secret	6.13	
	Epoxy, Cresol Novolac	29690-82-2	2.45	
	Carbon Black	1333-86-4	0.30	
	<b>Total</b>		<b>100.00</b>	
22.92	(mg) Total	Lead Frame	% of Total Weight	44.25
	Copper	7440-50-8	95.54	
	Iron	7439-89-6	2.35	
	Silver	7440-22-4	1.91	
	Zinc	7440-66-6	0.13	
	Phosphorous	7723-14-0	0.08	
	<b>Total</b>		<b>100.00</b>	
0.16	(mg) Total	Die Attach	% of Total Weight	0.31
	Metal oxide	Trade Secret	33	
	Epoxy resins	Trade Secret	33	
	Glycol ethers	Trade Secret	25	
	Curing / Hardener	Trade Secret	9	
	<b>Total</b>		<b>100.00</b>	
0.21	Total (mg)	Chip (Die)	% of Total Weight	0.41
	Doped Silicon	7440-21-3	100	
	<b>Total</b>		<b>100.00</b>	
0.18	(mg) Total	Wire Bond	% of Total Weight	0.35
	Doped Gold	7440-57-5	100	
	<b>Total</b>		<b>100.00</b>	
0.06	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.12
	Tin	7440-31-5	100.00	
	<b>Total</b>		<b>100.00</b>	
<b>51.800</b>				<b>100.000</b>



Semiconductor Device Type: RC 04 (Lead) SOT-143 (F7 / AB)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm				
Silica, vitreous	60676-86-0	Mold Compound	53.185	4.840	531.845	5.69 (mg) Total			62.57
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38.324	Mold Compound			
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.832	0.349	38.324	%			
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.533	0.139	15.330	Silica, vitreous 60676-86-0 85.00			
Carbon Black	1333-86-4	Mold Compound	0.188	0.017	1.877	Epoxy Resin Trade Secret 6.13			
Iron	7439-89-6	Lead Frame	14.095	1.283	140.947	Phenolic Resin Trade Secret 6.13			
Nickel	7440-02-0	Lead Frame	11.071	1.007	110.712	Epoxy, Cresol Novolac 29690-82-2 2.45			
Silver	7440-22-4	Lead Frame	0.502	0.046	5.022	Carbon Black 1333-86-4 0.30			
Cobalt	7440-48-4	Lead Frame	0.264	0.024	2.636	Total 100.00			
Manganese	7439-96-5	Lead Frame	0.211	0.019	2.109	2.40 (mg) Total			26.36
Zinc (Metal)	7440-44-0	Lead Frame	0.132	0.012	1.318	Lead Frame			
Silicon	7440-21-3	Lead Frame	0.079	0.007	791	%			
Phosphorous	7723-14-0	Lead Frame	0.007	0.001	66	Iron 7439-89-6 53.47			
Silver (Ag)	7440-22-4	Die Attach	0.259	0.024	2.591	Nickel 7440-02-0 42.00			
Proprietary Resin	Trade Secret	Die Attach	0.061	0.006	611	Silver 7440-22-4 1.91			
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.010	0.001	99	Cobalt 7440-48-4 1.00			
Silicon	7440-21-3	Chip (Die)	4.290	0.390	42.900	Manganese 7439-96-5 0.80			
Gold	7440-57-5	Wire Bond	0.110	0.010	1.100	Zinc (Metal) 7440-66-6 0.50			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	6.340	0.577	63.400	Silicon 7440-21-3 0.30			
<b>TOTALS:</b>			<b>100.000</b>	<b>9.100</b>	<b>1,000,000</b>	Phosphorous 7723-14-0 0.03			
<b>0.0091 g Total Mass</b>						Total 100.00			

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
5.69 (mg) Total			Mold Compound			% of Total Weight 62.57
Mold Compound			%			
Silica, vitreous 60676-86-0 85.00			Epoxy Resin Trade Secret 6.13			
Phenolic Resin Trade Secret 6.13			Epoxy, Cresol Novolac 29690-82-2 2.45			
Carbon Black 1333-86-4 0.30			Total 100.00			
2.40 (mg) Total			Lead Frame			% of Total Weight 26.36
Lead Frame			%			
Iron 7439-89-6 53.47			Nickel 7440-02-0 42.00			
Silver 7440-22-4 1.91			Cobalt 7440-48-4 1.00			
Manganese 7439-96-5 0.80			Zinc (Metal) 7440-66-6 0.50			
Zinc (Metal) 7440-66-6 0.50			Silicon 7440-21-3 0.30			
Phosphorous 7723-14-0 0.03			Total 100.00			
0.03 (mg) Total			Die Attach			% of Total Weight 0.33
Die Attach			%			
Silver (Ag) 7440-22-4 79			Proprietary Resin Trade Secret 19			
Proprietary Resin Trade Secret 19			Proprietary Curing agent & Hardener Trade Secret 3			
Proprietary Curing agent & Hardener Trade Secret 3			Total 100.00			
0.39 Total (mg)			Chip (Die)			% of Total Weight 4.29
Chip (Die)			%			
Doped Silicon 7440-21-3 100			Total 100.00			
0.01 (mg) Total			Wire Bond			% of Total Weight 0.11
Wire Bond			%			
Doped Gold 7440-57-5 100			Total 100.00			
0.58 (mg) Total			Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			% of Total Weight 6.34
Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			%			
Tin 7440-31-5 100.00			Total 100.00			
9.100			100.000			



Semiconductor Device Type: DB 03 (Lead SOT-223 (F6))				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	56.72	(mg) Total	Mold Compound	% of Total Weight	49.02	
Silica, vitreous	60676-86-0	Mold Compound	41.667	48.209	416,670			Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025			Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.002	3.474	30,025			Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.201	1.390	12,010			Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.147	0.170	1,471			Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.941	51.997	449,408			<b>Total 100.00</b>			
Iron	7439-89-6	Lead Frame	1.105	1.279	11,054	54.43	(mg) Total	Lead Frame	% of Total Weight	47.04	
Silver	7440-22-4	Lead Frame	0.896	1.037	8,961			Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.059	0.068	588			Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.039	0.045	388			Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.502	0.581	5,024			Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.118	0.137	1,184			Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.019	0.022	192			<b>Total 100.00</b>			
Silicon	7440-21-3	Chip (Die)	1.580	1.828	15,800	0.74	(mg) Total	Die Attach	% of Total Weight	0.64	
Gold	7440-57-5	Wire Bond	0.150	0.174	1,500			Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.570	1.816	15,700			Proprietary Resin	Trade Secret	19	
<b>0.1157 g Total Mass</b>			<b>TOTALS: 100.000 115.700 1,000,000</b>					Proprietary Curing agent & Hardener	Trade Secret	3	
								<b>Total 100.00</b>			
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Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.								Doped Silicon	7440-21-3	100	
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a>						0.17	(mg) Total	Wire Bond	% of Total Weight	0.15	
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.								Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.								<b>Total 100.00</b>			
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						1.82	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.57	
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.								Tin	7440-31-5	100.00	
								<b>Total 100.00</b>			
						115.700				100.000	



Semiconductor Device Type: DC 05 (Lead) SOT-223 (N7)

			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																																																																										
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	8.71	(mg) Total	Mold Compound	% of Total Weight	52.77																																																																									
Silica, vitreous	60676-86-0	Mold Compound	44.855	7.401	448,545	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Lead Frame</td><td>% of Total Weight</td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Lead Frame	% of Total Weight	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Die Attach</td><td>% of Total Weight</td></tr> <tr><td>Silver (Ag)</td><td>7440-22-4</td><td>79</td></tr> <tr><td>Proprietary Resin</td><td>Trade Secret</td><td>19</td></tr> <tr><td>Proprietary Curing agent &amp; Hardener</td><td>Trade Secret</td><td>3</td></tr> <tr><td><b>Total</b></td><td></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Die Attach	% of Total Weight	Silver (Ag)	7440-22-4	79	Proprietary Resin	Trade Secret	19	Proprietary Curing agent & Hardener	Trade Secret	3	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>0.17</td><td>Total (mg)</td><td>Chip (Die)</td><td>% of Total Weight</td><td>1.03</td></tr> <tr><td colspan="2">Doped Silicon</td><td>7440-21-3</td><td>100</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	0.17	Total (mg)	Chip (Die)	% of Total Weight	1.03	Doped Silicon		7440-21-3	100		<b>Total</b>			<b>100.00</b>						
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Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.232	0.533	32,322	<table border="1"> <tr><td>(mg) Total</td><td>Wire Bond</td><td>% of Total Weight</td><td>0.55</td></tr> <tr><td colspan="2">Doped Gold</td><td>7440-57-5</td><td>100</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	(mg) Total	Wire Bond	% of Total Weight	0.55	Doped Gold		7440-57-5	100		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>0.09</td><td>(mg) Total</td><td>Wire Bond</td><td>% of Total Weight</td><td>0.55</td></tr> <tr><td colspan="2">Doped Gold</td><td>7440-57-5</td><td>100</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	0.09	(mg) Total	Wire Bond	% of Total Weight	0.55	Doped Gold		7440-57-5	100		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																																
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Iron	7439-89-6	Lead Frame	0.865	0.143	8,646	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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<b>Total</b>			<b>100.00</b>																																																																																
Silver	7440-22-4	Lead Frame	0.701	0.116	7,008	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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Zinc	7440-66-6	Lead Frame	0.046	0.008	460	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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Phosphorous	7723-14-0	Lead Frame	0.030	0.005	304	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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Silver (Ag)	7440-22-4	Die Attach	0.667	0.110	6,673	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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Proprietary Resin	Trade Secret	Die Attach	0.157	0.026	1,573	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.026	0.004	255	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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Silicon	7440-21-3	Chip (Die)	1.030	0.170	10,300	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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Tin		7440-31-5	100.00																																																																																
<b>Total</b>			<b>100.00</b>																																																																																
Gold	7440-57-5	Wire Bond	0.550	0.091	5,500	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	8.010	1.322	80,100	<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>		<table border="1"> <tr><td>1.32</td><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td><td>8.01</td></tr> <tr><td colspan="2">Tin</td><td>7440-31-5</td><td>100.00</td><td></td></tr> <tr><td colspan="2"><b>Total</b></td><td></td><td><b>100.00</b></td><td></td></tr> </table>	1.32	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	8.01	Tin		7440-31-5	100.00		<b>Total</b>			<b>100.00</b>																															
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<b>TOTALS:</b>			<b>100.000</b>	<b>16.500</b>	<b>1,000,000</b>																																																																														
<b>0.0165 g Total Mass</b>																																																																																			

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Semiconductor Device Type: OS 05 (Lead) TSOT (L9)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	7.99	(mg) Total	Mold Compound	% of Total Weight	62.42
Silica, vitreous	60676-86-0	Mold Compound	53.057	6.791	530,570		Silica, vitreous	60676-86-0	85.00	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.823	0.489	38,232		Epoxy Resin	Trade Secret	6.13	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.823	0.489	38,232		Phenolic Resin	Trade Secret	6.13	
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.529	0.196	15,293		Epoxy, Cresol Novolac	29690-82-2	2.45	
Carbon Black	1333-86-4	Mold Compound	0.187	0.024	1,873		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	25.585	3.275	255,849		<b>Total</b>			<b>100.00</b>
Iron	7439-89-6	Lead Frame	0.629	0.081	6,293	3.43	(mg) Total	Lead Frame	% of Total Weight	26.78
Silver	7440-22-4	Lead Frame	0.510	0.065	5,102		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.033	0.004	335		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.022	0.003	221		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	1.531	0.196	15,308		Zinc	7440-66-6	0.13	
Proprietary Resin	Trade Secret	Die Attach	0.361	0.046	3,608		Phosphorous	7723-14-0	0.08	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.059	0.007	585		<b>Total</b>			<b>100.00</b>
Silicon	7440-21-3	Chip (Die)	5.340	0.684	53,400	0.25	(mg) Total	Die Attach	% of Total Weight	1.95
Gold	7440-57-5	Wire Bond	0.400	0.051	4,000		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	3.110	0.398	31,100		Proprietary Resin	Trade Secret	19	
<b>TOTALS:</b>			<b>100.000</b>	<b>12.800</b>	<b>1,000,000</b>		Proprietary Curing agent & Hardener	Trade Secret	3	
<b>0.0128 g Total Mass</b>							<b>Total</b>			<b>100.00</b>
<p>This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.</p> <p>Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a></p> <p>The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.</p> <p>Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.</p> <p>Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.</p> <p>Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.</p>										
						0.68	Total (mg)	Chip (Die)	% of Total Weight	5.34
							Doped Silicon	7440-21-3	100	
						<b>Total</b>			<b>100.00</b>	
						0.05	(mg) Total	Wire Bond	% of Total Weight	0.4
							Doped Gold	7440-57-5	100	
						<b>Total</b>			<b>100.00</b>	
						0.40	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	3.11
							Tin	7440-31-5	100.00	
						<b>Total</b>			<b>100.00</b>	
						<b>12.800</b>				<b>100.000</b>



Semiconductor Device Type: LB 03 (Lead) SC-70 (B2 / BJ)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
				<b>4.39</b>	<b>(mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>37.38</b>		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm					
Silica, vitreous	60676-86-0	Mold Compound	67.830	3.731	678,300	Silica, vitreous	60676-86-0	85.00		
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878	Epoxy Resin	Trade Secret	6.13		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	0.269	48,878	Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	0.108	19,551	Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.239	0.013	2,394	Carbon Black	1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	10.221	0.562	102,209	<b>Total</b>			<b>100.00</b>	
Iron	1309-37-1	Lead Frame	0.247	0.014	2,468	<b>0.58 (mg) Total</b>			<b>5.68</b>	
Zinc	7440-66-6	Lead Frame	0.013	0.001	131	Copper	7440-50-8	97.34		
Phosphate	7723-14-0	Lead Frame	0.009	0.000	87	Iron	1309-37-1	2.35		
Silver	7440-22-4	Lead Frame	0.008	0.000	84	Zinc	7440-66-6	0.13		
Chromium	7440-47-3	Lead Frame	0.001	0.000	11	Phosphate	7723-14-0	0.08		
Lead	7439-92-1	Lead Frame	0.001	0.000	11	Silver	7440-22-4	0.08		
Cadmium	7440-43-9	Lead Frame	0.000	0.000	1	Chromium	7440-47-3	0.01		
Silver (Ag)	7440-22-4	Die Attach	0.589	0.032	5,888	Lead	7439-92-1	0.01		
Proprietary Resin	Trade Secret	Die Attach	0.139	0.008	1,388	Cadmium	7440-43-9	0.00		
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.001	225	<b>Total</b>			<b>100.00</b>	
Silicon	7440-21-3	Chip (Die)	7.500	0.413	75,000	<b>0.04 (mg) Total</b>			<b>0.51</b>	
Gold	7440-57-5	Wire Bond	0.200	0.011	2,000	Silver (Ag)	7440-22-4	79		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.069	12,500	Proprietary Resin	Trade Secret	19		
<b>TOTALS:</b>				<b>100.000</b>	<b>5.500</b>	<b>1,000,000</b>	Proprietary Curing agent & Hardener	Trade Secret	3	
<b>0.0058 g Total Mass</b>							<b>Total</b>			<b>100.00</b>
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				<b>0.41</b>	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.51</b>		
							Doped Silicon	7440-21-3	100	
							<b>Total</b>			<b>100.00</b>
				<b>0.01</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>3</b>		
							Doped Gold	7440-57-5	100	
							<b>Total</b>			<b>100.00</b>
				<b>0.07</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>52.92</b>		
							Tin	7440-31-5	100.00	
							<b>Total</b>			<b>100.00</b>
				<b>5.500</b>				<b>100.000</b>		



Semiconductor Device Type: LT 05 (Lead) SC-70 (B4 / B2)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm				
Silica, vitreous	60676-86-0	Mold Compound	35.003	2.205	350,030	2.59 (mg) Total			41.18
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	2.522	0.159	25,223	Mold Compound			
Phenolic Resin (No Br / Cl / SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	2.522	0.159	25,223	Silica, vitreous 60676-86-0 85.00			
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.009	0.064	10,089	Epoxy Resin Trade Secret 6.13			
Carbon Black	1333-86-4	Mold Compound	0.124	0.008	1,235	Phenolic Resin Trade Secret 6.13			
Copper	7440-50-8	Lead Frame	6.630	0.418	66,303	Epoxy, Cresol Novolac 29690-82-2 2.45			
Iron	7439-89-6	Lead Frame	0.163	0.010	1,631	Carbon Black 1333-86-4 0.30			
Silver	7440-22-4	Lead Frame	0.132	0.008	1,322	Total 100.00			
Zinc	7440-66-6	Lead Frame	0.009	0.001	87	0.44 (mg) Total			6.94
Phosphorous	7723-14-0	Lead Frame	0.006	0.000	57	Lead Frame			
Silver (Ag)	7440-22-4	Die Attach	0.793	0.050	7,929	Copper 7440-50-8 95.54			
Proprietary Resin	Trade Secret	Die Attach	0.187	0.012	1,869	Iron 7439-89-6 2.35			
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.030	0.002	303	Silver 7440-22-4 1.91			
Silicon	7440-21-3	Chip (Die)	1.410	0.089	14,100	Zinc 7440-66-6 0.13			
Gold	7440-57-5	Wire Bond	0.930	0.059	9,300	Phosphorous 7723-14-0 0.08			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	48.530	3.057	485,300	Total 100.00			
<b>0.0063 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>6.300</b>	<b>1,000,000</b>			

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Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.

2.59 (mg) Total			Mold Compound	% of Total Weight	41.18
0.44 (mg) Total			Lead Frame	% of Total Weight	6.94
0.06 (mg) Total			Die Attach	% of Total Weight	1.01
0.09 Total (mg)			Chip (Die)	% of Total Weight	1.41
0.06 (mg) Total			Wire Bond	% of Total Weight	0.93
3.06 (mg) Total			Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	48.53
6.300			Total		100.000



Semiconductor Device Type: LT or LTY 05 (Lead) SC-70 NiPdAu (8A)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	3.94	(mg) Total	Mold Compound	% of Total Weight	62.53	
Silica, vitreous	60676-86-0	Mold Compound	53.151	3.348	531,505		Silica, vitreous	60676-86-0	85.00		
Epoxy Resin	Trade Secret	Mold Compound	3.830	0.241	38,300		Epoxy Resin	Trade Secret	6.13		
Phenolic Resin	Trade Secret	Mold Compound	3.830	0.241	38,300		Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.532	0.097	15,320		Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black	1333-86-4	Mold Compound	0.188	0.012	1,876		Carbon Black	1333-86-4	0.30		
Copper	7440-50-8	Lead Frame	24.821	1.564	248,212		<b>Total</b>			<b>100.00</b>	
Iron	7439-89-6	Lead Frame	0.587	0.037	5,867	<b>1.61</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>25.51</b>	
Phosphorous	7723-14-0	Lead Frame	0.064	0.004	638		Copper	7440-50-8	97.30		
Zinc (Metal)	7440-44-0	Lead Frame	0.038	0.002	383		Iron	7439-89-6	2.30		
Aluminum oxide	1344-28-1	Die Attach	0.601	0.038	6,012		Phosphorous	7723-14-0	0.25		
Diethylene glycol monoethyl ether acetate	112-15-2	Die Attach	0.601	0.038	6,012		Zinc (Metal)	7440-44-0	0.15		
Epoxy resin	Trade Secret - 10114	Die Attach	0.328	0.021	3,279		<b>Total</b>			<b>100.00</b>	
Epoxy resin	Trade Secret - 10105	Die Attach	0.164	0.010	1,640	<b>0.11</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>1.76</b>	
Amine	Trade Secret - 10039	Die Attach	0.066	0.004	656		Aluminum oxide	1344-28-1	34		
Silicon	7440-21-3	Chip (Die)	7.520	0.474	75,200		Diethylene glycol monoethyl ether acetate	112-15-2	34		
Gold	7440-57-5	Wire Bond	1.430	0.090	14,300		Epoxy resin	Trade Secret - 10114	19		
Nickel	7440-02-0	Plating on external leads (pins)	1.125	0.071	11,250		Epoxy resin	Trade Secret - 10105	9		
Palladium	7440-05-03	Plating on external leads (pins)	0.063	0.004	625		Amine	Trade Secret - 10039	4		
Gold	7440-57-5	Plating on external leads (pins)	0.063	0.004	625		<b>Total</b>			<b>100.00</b>	
<b>0.0063 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>6.300</b>	<b>1,000,000</b>	<b>0.47</b>	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.52</b>
								Doped Silicon	7440-21-3	100	
							<b>Total</b>			<b>100.00</b>	
							<b>0.09</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>1.43</b>
								Doped Gold	7440-57-5	100	
							<b>Total</b>			<b>100.00</b>	
							<b>0.08</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins)</b>	<b>% of Total Weight</b>	<b>1.25</b>
								Nickel	7440-02-0	90.00	
								Palladium	7440-05-03	5.00	
								Gold	7440-57-5	5.00	
							<b>Total</b>			<b>100.00</b>	
							<b>6.300</b>				<b>100.000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: LT 06 (Lead) SC-70 (R5)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																																																																																		
Basic Substance	CAS Number	"Contained in" Sub-Component	% Total Weight	mg/part	ppm	2.79	(mg) Total	Mold Compound	% of Total Weight	42.97																																																																																		
Silica, vitreous	60676-86-0	Mold Compound	36.525	2.374	365,245	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Lead Frame</td><td>% of Total Weight</td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Lead Frame	% of Total Weight	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Die Attach</td><td>% of Total Weight</td></tr> <tr><td>Aluminum oxide</td><td>1344-28-1</td><td>34</td></tr> <tr><td>Epoxy resin</td><td>Trade Secret</td><td>62</td></tr> <tr><td>Amine</td><td>Trade Secret</td><td>4</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Die Attach	% of Total Weight	Aluminum oxide	1344-28-1	34	Epoxy resin	Trade Secret	62	Amine	Trade Secret	4	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>Total (mg)</td><td>Chip (Die)</td><td>% of Total Weight</td></tr> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Total (mg)	Chip (Die)	% of Total Weight	Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Wire Bond</td><td>% of Total Weight</td></tr> <tr><td>Doped Gold</td><td>7440-57-5</td><td>100</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Wire Bond	% of Total Weight	Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td></tr> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>
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Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.053	0.068	10,528	<table border="1"> <tr><td>(mg) Total</td><td>Lead Frame</td><td>% of Total Weight</td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Lead Frame	% of Total Weight	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Die Attach</td><td>% of Total Weight</td></tr> <tr><td>Aluminum oxide</td><td>1344-28-1</td><td>34</td></tr> <tr><td>Epoxy resin</td><td>Trade Secret</td><td>62</td></tr> <tr><td>Amine</td><td>Trade Secret</td><td>4</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Die Attach	% of Total Weight	Aluminum oxide	1344-28-1	34	Epoxy resin	Trade Secret	62	Amine	Trade Secret	4	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>Total (mg)</td><td>Chip (Die)</td><td>% of Total Weight</td></tr> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Total (mg)	Chip (Die)	% of Total Weight	Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Wire Bond</td><td>% of Total Weight</td></tr> <tr><td>Doped Gold</td><td>7440-57-5</td><td>100</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Wire Bond	% of Total Weight	Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td><td>% of Total Weight</td></tr> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>																			
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Silicon	7440-21-3	Chip (Die)	1.860	0.121	18,600	<table border="1"> <tr><td>(mg) Total</td><td>Lead Frame</td><td>% of Total Weight</td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Lead Frame	% of Total Weight	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Die Attach</td><td>% of Total Weight</td></tr> <tr><td>Aluminum oxide</td><td>1344-28-1</td><td>34</td></tr> <tr><td>Epoxy resin</td><td>Trade Secret</td><td>62</td></tr> <tr><td>Amine</td><td>Trade Secret</td><td>4</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	(mg) Total	Die Attach	% of Total Weight	Aluminum oxide	1344-28-1	34	Epoxy resin	Trade Secret	62	Amine	Trade Secret	4	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>Total (mg)</td><td>Chip (Die)</td><td>% of Total Weight</td></tr> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Total (mg)	Chip (Die)	% of Total Weight	Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>																																							
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Semiconductor Device Type: SS 20 (Lead) SSOP .209" (G3 / GF)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>131.03 (mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>79.8</b>	
Silica, vitreous	60676-86-0	Mold Compound	69.354	113.880	693,542		Silica, vitreous 60676-86-0	86.91		
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	10.050	61,207		Epoxy Resin Trade Secret	7.67		
Phenolic Resin (No Br / CL SbO <sub>3</sub> , No diantimony trioxide)	Trade Secret	Mold Compound	4.078	6.696	40,778		Phenolic Resin Trade Secret	5.11		
Carbon Black	1333-86-4	Mold Compound	0.247	0.406	2,474		Carbon Black 1333-86-4	0.31		
Copper	7440-50-8	Lead Frame	10.031	16.472	100,314		<b>Total</b>	<b>100.00</b>		
Iron	7439-89-6	Lead Frame	0.247	0.405	2,468	<b>17.24 (mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>	
Silver	7440-22-4	Lead Frame	0.200	0.328	2,000		Copper 7440-50-8	95.54		
Zinc	7440-66-6	Lead Frame	0.013	0.022	131		Iron 7439-89-6	2.35		
Phosphorous	7723-14-0	Lead Frame	0.009	0.014	87		Silver 7440-22-4	1.91		
Silver (Ag)	7440-22-4	Die Attach	0.563	0.924	5,625		Zinc 7440-66-6	0.13		
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.172	1,050		Phosphorous 7723-14-0	0.08		
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.092	563		<b>Total</b>	<b>100.00</b>		
Modified Amine	827-43-0	Die Attach	0.026	0.043	263	<b>1.23 (mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>	
Silicon	7440-21-3	Chip (Die)	7.500	12.315	75,000		Silver (Ag) 7440-22-4	75.00		
Doped Gold	7440-57-5	Wire Bond	0.200	0.328	2,000		Modified Epoxy Resin 13561-08-5	14.00		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.053	12,500		Diglycidylether of bisphenol-F 54208-63-8	7.50		
		<b>TOTALS:</b>	<b>100.000</b>	<b>164.200</b>	<b>1,000,000</b>		Modified Amine 827-43-0	3.50		
<b>0.1642 g Total Mass</b>							<b>Total</b>	<b>100.00</b>		
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
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Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.										
						<b>2.05 (mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.25</b>	
							Tin 7440-31-5	100.00		
							<b>Total</b>	<b>100.00</b>		
						<b>164.200</b>			<b>100.000</b>	



Semiconductor Device Type: SS 24 (Lead) SSOP .209" (J2 / JH)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																																																																																																																																																																																																																																																																																																																											
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	121.55 (mg) Total		Mold Compound	% of Total Weight	65.17																																																																																																																																																																																																																																																																																																																											
Silica, vitreous	60676-86-0	Mold Compound	55.395	103.316	553,945	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="3" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>			<b>100.00</b>	<table border="1"> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="3" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	<b>Total</b>			<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>Lead Frame</td><td>% of Total Weight</td><td>29.54</td></tr> <tr><td colspan="4" rowspan="5"> <table border="1"> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="3" style="text-align: right;"><b>Total</b></td><td><b>100.00</b></td></tr> </table> </td> </tr> <tr><td>55.10</td><td></td><td></td><td></td></tr> <tr><td>1.57</td><td></td><td></td><td></td></tr> <tr><td>4.64</td><td></td><td></td><td></td></tr> <tr><td>0.47</td><td></td><td></td><td></td></tr> <tr><td>3.19</td><td></td><td></td><td></td></tr> <tr><td colspan="4" style="text-align: right;"><b>TOTALS:</b></td><td><b>100.000</b></td><td><b>186.510</b></td><td><b>1,000,000</b></td><td colspan="2"></td><td></td></tr> <tr> <td colspan="11" style="text-align: center;"><b>0.1865 g Total Mass</b></td> </tr> <tr> <td colspan="11">This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</td> </tr> <tr> <td colspan="11">Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</td> </tr> <tr> <td colspan="11">If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.</td> </tr> <tr> <td colspan="11">Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. 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Semiconductor Device Type: SS and SI 28 (Lead) SSOP .209" (N2/ ND)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																														
Basic Substance	CAS Number	"Contained in" Sub-Component	% Total Weight	mg/part	ppm	182.90	(mg) Total	Mold Compound	% of Total Weight	79.8																													
Silica, vitreous	60676-86-0	Mold Compound	67.830	155.466	678.300	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>85.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>6.13</td></tr> <tr><td>Epoxy, Cresol Novolac</td><td>29690-82-2</td><td>2.45</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>	Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>	<table border="1"> <tr><td>(mg) Total</td><td>182.90</td><td>% of Total Weight</td><td>79.8</td></tr> </table>	(mg) Total	182.90	% of Total Weight	79.8	<table border="1"> <tr><td>(mg) Total</td><td>182.90</td><td>% of Total Weight</td><td>79.8</td></tr> </table>	(mg) Total	182.90	% of Total Weight	79.8	<table border="1"> <tr><td>(mg) Total</td><td>182.90</td><td>% of Total Weight</td><td>79.8</td></tr> </table>	(mg) Total	182.90	% of Total Weight	79.8
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Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48.878																																		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.888	11.203	48.878																																		
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.955	4.481	19.551																																		
Carbon Black	1333-86-4	Mold Compound	0.239	0.549	2.394																																		
Copper	7440-50-8	Lead Frame	10.031	22.992	100.314																																		
Iron	7439-89-6	Lead Frame	0.247	0.566	2.468	<table border="1"> <tr><td>(mg) Total</td><td>24.07</td><td>Lead Frame</td><td>10.5</td></tr> <tr><td>(mg) Total</td><td>24.07</td><td>Lead Frame</td><td>10.5</td></tr> </table>	(mg) Total	24.07	Lead Frame	10.5	(mg) Total	24.07	Lead Frame	10.5	<table border="1"> <tr><td>(mg) Total</td><td>24.07</td><td>Lead Frame</td><td>10.5</td></tr> </table>	(mg) Total	24.07	Lead Frame	10.5	<table border="1"> <tr><td>(mg) Total</td><td>24.07</td><td>Lead Frame</td><td>10.5</td></tr> </table>	(mg) Total	24.07	Lead Frame	10.5															
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(mg) Total	24.07	Lead Frame	10.5																																				
Silver	7440-22-4	Lead Frame	0.200	0.458	2.000																																		
Zinc	7440-66-6	Lead Frame	0.013	0.030	1.31																																		
Phosphorous	7723-14-0	Lead Frame	0.009	0.020	0.87																																		
Silver (Ag)	7440-22-4	Die Attach	0.563	1.289	5.625																																		
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.241	1.050																																		
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.129	563	<table border="1"> <tr><td>(mg) Total</td><td>1.72</td><td>Die Attach</td><td>0.75</td></tr> <tr><td>(mg) Total</td><td>1.72</td><td>Die Attach</td><td>0.75</td></tr> </table>	(mg) Total	1.72	Die Attach	0.75	(mg) Total	1.72	Die Attach	0.75	<table border="1"> <tr><td>(mg) Total</td><td>1.72</td><td>Die Attach</td><td>0.75</td></tr> </table>	(mg) Total	1.72	Die Attach	0.75	<table border="1"> <tr><td>(mg) Total</td><td>1.72</td><td>Die Attach</td><td>0.75</td></tr> </table>	(mg) Total	1.72	Die Attach	0.75															
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Modified Amine	827-43-0	Die Attach	0.026	0.060	263																																		
Silicon	7440-21-3	Chip (Die)	7.500	17.190	75.000																																		
Gold	7440-57-5	Wire Bond	0.200	0.458	2.000																																		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	2.865	12.500																																		
<b>TOTALS:</b>			<b>100.000</b>	<b>229.200</b>	<b>1,000,000</b>																																		
<b>0.2292 g Total Mass</b>																																							
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						17.19	Total (mg)	Chip (Die)	% of Total Weight	7.5																													
						<table border="1"> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>																										
Doped Silicon	7440-21-3	100																																					
<b>Total</b>		<b>100.00</b>																																					
						0.46	(mg) Total	Wire Bond	% of Total Weight	0.2																													
						<table border="1"> <tr><td>Doped Gold</td><td>7440-57-5</td><td>100</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>																										
Doped Gold	7440-57-5	100																																					
<b>Total</b>		<b>100.00</b>																																					
						2.87	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25																													
						<table border="1"> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td></tr> <tr><td colspan="2"><b>Total</b></td><td><b>100.00</b></td></tr> </table>		Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>																										
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<b>Total</b>		<b>100.00</b>																																					
						229.200	<b>Total</b>		100.000	100.000																													





Semiconductor Device Type: WHE 32 TSOP 8x14mm (W6)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	199.26	(mg) Total	Mold Compound	% of Total Weight	79.8	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	169.372	678.300			Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	6.943	17.336	69.426			Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	4.788	11.956	47.880			Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.239	0.598	2.394			Carbon Black	1333-86-4	0.30	
								<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	Lead Frame	10.000	24.971	100.003	26.22	(mg) Total	Lead Frame		10.5	
Nickel	7440-02-0	Lead Frame	0.267	0.666	2.667			Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.118	473			Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.026	105			Silicon	7440-21-3	0.45	
Silver	7440-22-4	Lead Frame	0.175	0.438	1,752			Magnesium	7439-95-4	0.10	
Silver	7440-22-4	Die Attach	0.600	1.498	6,000			Silver	7440-22-4	1.67	
Epoxy Resin	Trade Secret	Die Attach	0.128	0.318	1,275			<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	Die Attach	0.023	0.056	225	1.87	(mg) Total	Die Attach		0.75	
Silicon	7440-21-3	Chip (Die)	7.500	18.728	75,000			Silver	7440-22-4	80.00	
Doped Gold	7440-57-5	Wire Bond	0.200	0.499	2,000			Epoxy Resin	Trade Secret	17.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.121	12,500			Copper	7440-50-8	3.00	
<b>0.2497 g Total Mass</b>						<b>TOTALS:</b>			<b>100.000</b>	<b>249.700</b>	<b>1,000,000</b>
<p>This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.</p> <p>Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a></p> <p>The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.</p> <p>Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.</p> <p>Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.</p> <p>Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.</p>											
						18.73	(mg) Total	Chip (Die)	% of Total Weight	7.5	
								Silicon	7440-21-3	100	
						<b>Total</b>		<b>100.00</b>			
						0.50	(mg) Total	Wire Bond	% of Total Weight	0.2	
								Doped Gold	7440-57-5	100.00	
						<b>Total</b>		<b>100.00</b>			
						3.12	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25	
								Tin	7440-31-5	100.00	
						<b>Total</b>		<b>100.00</b>			
						249.700				100.000	



Semiconductor Device Type: EIE 40 TSOP 10x20mm (W8)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.120	263.095	571,200	309.52	Silica, vitreous (or fused) 60676-86-0 Epoxy Resin Trade Secret Phenolic Resin Trade Secret Carbon Black 1333-86-4	85.00 8.70 6.00 0.30	67.2	
Epoxy Resin	Trade Secret	Mold Compound	5.846	26.929	58,464					
Phenolic Resin	Trade Secret	Mold Compound	4.032	18.571	40,320					
Carbon Black	1333-86-4	Mold Compound	0.202	0.929	2,016					
Copper	7440-50-8	Lead Frame	26.248	120.900	262,484	126.94	Lead Frame 7440-50-8 Nickel 7440-02-0 Silicon 7440-21-3 Magnesium 7439-95-4 Silver 7440-22-4	100.00	27.56	
Nickel	7440-02-0	Lead Frame	0.700	3.224	7,000					
Silicon	7440-21-3	Lead Frame	0.124	0.571	1,240					
Magnesium	7439-95-4	Lead Frame	0.028	0.127	276					
Silver	7440-22-4	Lead Frame	0.460	2.119	4,600					
Silver	7440-22-4	Die Attach	0.360	1.658	3,600					
Epoxy Resin	Trade Secret	Die Attach	0.077	0.352	765					
Copper	7440-50-8	Die Attach	0.014	0.062	135					
Silicon	7440-21-3	Chip (Die)	1.900	8.751	19,000					
Doped Gold	7440-57-5	Wire Bond	0.280	1.290	2,800					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.610	12.022	26,100	2.07	Die Attach 7440-22-4 Epoxy Resin Trade Secret Copper 7440-50-8	100.00	0.45	
<b>TOTALS:</b>			<b>100.000</b>	<b>460.600</b>	<b>1,000,000</b>					
<b>0.4606 g Total Mass</b>										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).										
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data.										
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.										
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offersings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offersings/industries/chemicals/plastics/</a>										
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.										
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						8.75	(mg) Total	Chip (Die)	% of Total Weight	1.9
						Silicon		7440-21-3	100	
						Total 100.00				
						1.29	(mg) Total	Wire Bond	% of Total Weight	0.28
						Doped Gold		7440-57-5	100.00	
						Total 100.00				
						12.02	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.61
						Tin		7440-31-5	100.00	
						Total 100.00				
						460.600			100.000	100.000



Semiconductor Device Type: EKE 48 TSOP 12x20mm (W9)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm				
Silica, vitreous (or fused)	60676-86-0	Mold Compound	56.814	320.715	568,140	377.31 (mg) Total		66.84	
Epoxy Resin	Trade Secret	Mold Compound	5.815	32.826	58,151	Silica, vitreous (or fused) 60676-86-0 85.00			
Phenolic Resin	Trade Secret	Mold Compound	4.010	22.639	40,104	Epoxy Resin Trade Secret 8.70			
Carbon Black	1333-86-4	Mold Compound	0.201	1.132	2,005	Phenolic Resin Trade Secret 6.00			
Copper	7440-50-8	Lead Frame	26.982	152.312	269,818	Carbon Black 1333-86-4 0.30			
Nickel	7440-02-0	Lead Frame	0.720	4.062	7,196	<b>Total 100.00</b>			
Silicon	7440-21-3	Lead Frame	0.127	0.720	1,275	159.92 (mg) Total		28.33	
Magnesium	7439-95-4	Lead Frame	0.028	0.160	283	Lead Frame			
Silver	7440-22-4	Lead Frame	0.473	2.669	4,728	% of Total Weight			
Silver	7440-22-4	Die Attach	0.304	1.716	3,040	Copper 7440-50-8 95.24			
Epoxy Resin	Trade Secret	Die Attach	0.065	0.365	646	Nickel 7440-02-0 2.54			
Copper	7440-50-8	Die Attach	0.011	0.064	114	Silicon 7440-21-3 0.45			
Silicon	7440-21-3	Chip (Die)	1.380	7.790	13,800	Magnesium 7439-95-4 0.10			
Doped Gold	7440-57-5	Wire Bond	0.320	1.806	3,200	Silver 7440-22-4 1.67			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.750	15.524	27,500	<b>Total 100.00</b>			
<b>TOTALS:</b>			<b>100.000</b>	<b>564.500</b>	<b>1,000,000</b>	2.15 (mg) Total		0.38	
<b>0.5645 g Total Mass</b>									

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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377.31 (mg) Total		Mold Compound	% of Total Weight	66.84
159.92 (mg) Total		Lead Frame	% of Total Weight	28.33
2.15 (mg) Total		Die Attach	% of Total Weight	0.38
7.79 (mg) Total		Chip (Die)	% of Total Weight	1.38
1.81 (mg) Total		Wire Bond	% of Total Weight	0.32
15.52 (mg) Total		Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.75
564.500		Tin	7440-31-5	100.00
		<b>Total</b>		<b>100.00</b>
				<b>100.000</b>



Semiconductor Device Type: TO and ZB 03 (Lead) TO-92 (A2 / AU)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3			
<b>Basic Substance</b>				<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>(mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>56.77</b>	
Silica, vitreous				60676-86-0	Mold Compound	48.255	96.992	482,545	Silica, vitreous	60676-86-0	85.00		
Epoxy Resin (No bromine, No diantimony trioxide)				Trade Secret	Mold Compound	3.477	6.989	34,772	Epoxy Resin	Trade Secret	6.13		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)				Trade Secret	Mold Compound	3.477	6.989	34,772	Phenolic Resin	Trade Secret	6.13		
Epoxy, Cresol Novolac				29690-82-2	Mold Compound	1.391	2.796	13,909	Epoxy, Cresol Novolac	29690-82-2	2.45		
Carbon Black				1333-86-4	Mold Compound	0.170	0.342	1,703	Carbon Black	1333-86-4	0.30		
Copper				7440-50-8	Lead Frame	38.024	76.428	380,239	<b>Total</b>			<b>100.00</b>	
Iron				7439-89-6	Lead Frame	0.935	1.880	9,353	<b>80.00</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>39.8</b>
Silver				7440-22-4	Lead Frame	0.758	1.524	7,582	Copper	7440-50-8	95.54		
Zinc				7440-66-6	Lead Frame	0.050	0.100	498	Iron	7439-89-6	2.35		
Phosphorous				7723-14-0	Lead Frame	0.033	0.066	328	Silver	7440-22-4	1.91		
Silver				7440-22-4	Die Attach	0.066	0.134	664	Zinc	7440-66-6	0.13		
Epoxy Resin				9003-36-5	Die Attach	0.017	0.034	169	Phosphorous	7723-14-0	0.08		
t-Butyl phenyl glycidyl ether				3101-60-8	Die Attach	0.006	0.011	57	<b>Total</b>			<b>100.00</b>	
Phenolic hardener				92-88-6	Die Attach	0.000	0.001	3	<b>0.18</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.09</b>
Butyl cellosolve acetate				112-07-2	Die Attach	0.001	0.001	7	Silver	7440-22-4	74		
Silicon				7440-21-3	Chip (Die)	0.800	1.608	8,000	Epoxy Resin	9003-36-5	19		
Gold				7440-57-5	Wire Bond	0.040	0.080	400	t-Butyl phenyl glycidyl ether	3101-60-8	6		
Tin				7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.500	5.025	25,000	Phenolic hardener	92-88-6	0		
<b>TOTALS:</b>						<b>100.000</b>	<b>201.000</b>	<b>1,000,000</b>	Butyl cellosolve acetate	112-07-2	1		
<b>0.2010 g Total Mass</b>									<b>Total</b>			<b>100.00</b>	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).													
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The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.													
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<b>1.61</b>									<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.8</b>	
									Doped Silicon	7440-21-3	100		
									<b>Total</b>			<b>100.00</b>	
<b>0.08</b>									<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.04</b>	
									Doped Gold	7440-57-5	100		
									<b>Total</b>			<b>100.00</b>	
<b>5.03</b>									<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>2.5</b>	
									Tin	7440-31-5	100.00		
									<b>Total</b>			<b>100.00</b>	
<b>201.000</b>												<b>100.000</b>	



Semiconductor Device Type: AB 03 (Lead) TO-220 (F8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	536.44	(mg) Total	Mold Compound	% of Total Weight	28.38
Fused Silica	60676-86-0	Mold Compound	24.974	472.066	249,744		Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	0.922	17.434	9,224		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.851	16.093	8,514		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.277	24.140	12,771		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.071	1.341	710		Carbon Black	1333-86-4	0.25	
Misc.	Trade Secret	Mold Compound	0.284	5.364	2,838		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	68.874	1301.860	688,742		<b>Total 100.00</b>			
Tin	7440-31-5	Lead Frame	0.116	2.193	1,160	1329.38	(mg) Total	Lead Frame	% of Total Weight	70.33
Silver	7440-22-4	Lead Frame	1.340	25.325	13,398		Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.063	1.187	628		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.015	0.280	148		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.002	0.045	24		<b>Total 100.00</b>			
Silicon	7440-21-3	Chip (Die)	0.600	11.341	6,000	1.51	(mg) Total	Die Attach	% of Total Weight	0.08
Gold	7440-57-5	Wire Bond	0.050	0.945	500		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.560	10.585	5,600		Proprietary Resin	Trade Secret	19	
<b>1.8902 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>1,890.200</b>	<b>1,000,000</b>	Proprietary Curing agent & Hardener	Trade Secret	3	
						<b>Total 100.00</b>				
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						11.34	Total (mg)	Chip (Die)	% of Total Weight	0.6
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.							Doped Silicon	7440-21-3	100	
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a>						0.95	(mg) Total	Wire Bond	% of Total Weight	0.05
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.							Doped Gold	7440-57-5	100	
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						<b>Total 100.00</b>				
						<b>1,890.200</b>				<b>100.000</b>



Semiconductor Device Type: AT 05 (Lead) TO-220 (B8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
<b>Basic Substance</b>	<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>526.92</b>	<b>(mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>26.56</b>
Fused Silica	60676-86-0	Mold Compound	23.373	463.693	233.728		Fused Silica	60676-86-0	88.00	
Epoxy Resin 1	Trade Secret	Mold Compound	0.863	17.125	8.632		Epoxy Resin 1	Trade Secret	3.25	
Epoxy Resin 2	Trade Secret	Mold Compound	0.797	15.808	7.968		Epoxy Resin 2	Trade Secret	3.00	
Phenol Resin	Trade Secret	Mold Compound	1.195	23.712	11.952		Phenol Resin	Trade Secret	4.50	
Carbon Black	1333-86-4	Mold Compound	0.066	1.317	664		Carbon Black	1333-86-4	0.25	
Misc.	Trade Secret	Mold Compound	0.266	5.269	2,656		Undeclared	Trade Secret	1.00	
Copper	7440-50-8	Lead Frame	70.627	1401.171	706,271		<b>Total 100.00</b>			
Tin	7440-31-5	Lead Frame	0.119	2.361	1,190	<b>1430.79</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>72.12</b>
Silver	7440-22-4	Lead Frame	1.374	27.257	13,739		Copper	7440-50-8	97.93	
Silver (Ag)	7440-22-4	Die Attach	0.071	1.402	707		Tin	7440-31-5	0.17	
Proprietary Resin	Trade Secret	Die Attach	0.017	0.330	167		Silver	7440-22-4	1.91	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.003	0.054	27		<b>Total 100.00</b>			
Silicon	7440-21-3	Chip (Die)	0.620	12.300	6,200	<b>1.79</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.09</b>
Gold	7440-57-5	Wire Bond	0.040	0.794	400		Silver (Ag)	7440-22-4	79	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.570	11.308	5,700		Proprietary Resin	Trade Secret	19	
<b>1.9839 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>1,983.900</b>	<b>1,000.000</b>	Proprietary Curing agent & Hardener	Trade Secret	3	
							<b>Total 100.00</b>			
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						<b>12.30</b>	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>0.62</b>
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.							Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.						<b>Total 100.00</b>				
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>						<b>0.79</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.04</b>
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.							Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.						<b>Total 100.00</b>				
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						<b>11.31</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>0.57</b>
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.							Tin	7440-31-5	100.00	
						<b>Total 100.00</b>				
						<b>1,983.900</b>				<b>100.000</b>



Semiconductor Device Type: PT 32 (Lead) TQFP 7x7x1mm (T5)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	229.469	678,300	269.96		85.00	79.8	
Epoxy Resin	Trade Secret	Mold Compound	6.943	23.487	69,426		Epoxy Resin	8.70		
Phenolic Resin	Trade Secret	Mold Compound	4.788	16.198	47,880		Phenolic Resin	6.00		
Carbon Black	1333-86-4	Mold Compound	0.239	0.810	2,394		Carbon Black	0.30		
Copper	7440-50-8	Lead Frame	10.229	34.603	102,286					
Tin	7440-31-5	Lead Frame	0.026	0.089	263					
Silver	7440-22-4	Lead Frame	0.200	0.677	2,000					
Zinc	7440-66-6	Lead Frame	0.019	0.064	189					
Chromium	7440-47-3	Lead Frame	0.026	0.089	263					
Silver (Ag)	7440-22-4	Die Attach	0.623	2.106	6,225					
ANHYDRIDE	Trade Secret	Die Attach	0.068	0.228	675					
EPOXY RESIN	Trade Secret	Die Attach	0.060	0.203	600					
Silicon	7440-21-3	Chip (Die)	7.500	25.373	75,000					
Gold	7440-57-5	Wire Bond	0.200	0.677	2,000					
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.229	12,500					
<b>0.3383 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>338.300</b>	<b>1,000,000</b>				
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						25.37				7.5
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.						Doped Silicon				100
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.						Total				100.00
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a>						0.68				0.2
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.						Doped Gold				100
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.						Total				100.00
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						4.23				1.25
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.						Tin				100.00
						Total				100.00
						338.300				100.000



Semiconductor Device Type: PT 44 (Lead) TQFP 10x10x1mm (T4)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																										
<b>Basic Substance</b>				<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	<b>218.09 (mg) Total</b>	<b>Mold Compound</b>	<b>% of Total Weight</b>	<b>79.8</b>																								
Silica, vitreous				60676-86-0	Mold Compound	69.354	189.545	693.542	<table border="1"> <tr> <td>Silica, vitreous</td> <td>60676-86-0</td> <td>86.91</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>7.67</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>5.11</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.31</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				Silica, vitreous	60676-86-0	86.91	Epoxy Resin	Trade Secret	7.67	Phenolic Resin	Trade Secret	5.11	Carbon Black	1333-86-4	0.31	<b>Total</b>		<b>100.00</b>									
Silica, vitreous	60676-86-0	86.91																																		
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Carbon Black	1333-86-4	0.31																																		
<b>Total</b>		<b>100.00</b>																																		
Epoxy Resin (No bromine, No diantimony trioxide)				Trade Secret	Mold Compound	6.121	16.728	61.207	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Lead Frame</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>28.70</td> <td>28.70</td> <td>10.5</td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.67</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>0.10</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	28.70	28.70	10.5	Copper	7440-50-8	95.24	Nickel	7440-02-0	2.54	Silver	7440-22-4	1.67	Silicon	7440-21-3	0.45	Magnesium	7439-95-4	0.10	<b>Total</b>		<b>100.00</b>
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28.70	28.70	10.5																																		
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<b>Total</b>		<b>100.00</b>																																		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)				Trade Secret	Mold Compound	4.078	11.145	40.778	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Die Attach</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>2.05</td> <td>2.05</td> <td>0.75</td> </tr> <tr> <td>Silver (Ag)</td> <td>7440-22-4</td> <td>80</td> </tr> <tr> <td>Acrylate Urethane Oligomer</td> <td>General</td> <td>20</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	2.05	2.05	0.75	Silver (Ag)	7440-22-4	80	Acrylate Urethane Oligomer	General	20	<b>Total</b>		<b>100.00</b>									
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Acrylate Urethane Oligomer	General	20																																		
<b>Total</b>		<b>100.00</b>																																		
Carbon Black				1333-86-4	Mold Compound	0.247	0.676	2.474	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>20.50</td> <td>20.50</td> <td>7.5</td> </tr> <tr> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	20.50	20.50	7.5	Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>												
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Doped Silicon	7440-21-3	100																																		
<b>Total</b>		<b>100.00</b>																																		
Copper				7440-50-8	Lead Frame	10.000	27.331	100.003	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>0.55</td> <td>0.55</td> <td>0.2</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	0.55	0.55	0.2	Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>												
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Doped Gold	7440-57-5	100																																		
<b>Total</b>		<b>100.00</b>																																		
Nickel				7440-02-0	Lead Frame	0.267	0.729	2.667	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>3.42</td> <td>3.42</td> <td>1.25</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	3.42	3.42	1.25	Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>												
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Silver				7440-22-4	Lead Frame	0.175	0.479	1.752	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>273.300</td> <td>273.300</td> <td>100.000</td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	273.300	273.300	100.000																		
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273.300	273.300	100.000																																		
Silicon				7440-21-3	Lead Frame	0.047	0.129	473	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>273.300</td> <td>273.300</td> <td>100.000</td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	273.300	273.300	100.000																		
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Magnesium				7439-95-4	Lead Frame	0.011	0.029	105	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>273.300</td> <td>273.300</td> <td>100.000</td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	273.300	273.300	100.000																		
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Silver (Ag)				7440-22-4	Die Attach	0.600	1.640	6,000	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>273.300</td> <td>273.300</td> <td>100.000</td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	273.300	273.300	100.000																		
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Acrylate Urethane Oligomer				General	Die Attach	0.150	0.410	1,500	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>273.300</td> <td>273.300</td> <td>100.000</td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	273.300	273.300	100.000																		
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273.300	273.300	100.000																																		
Silicon				7440-21-3	Chip (Die)	7.500	20.498	75,000	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>273.300</td> <td>273.300</td> <td>100.000</td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	273.300	273.300	100.000																		
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Gold				7440-57-5	Wire Bond	0.200	0.547	2,000	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>273.300</td> <td>273.300</td> <td>100.000</td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	273.300	273.300	100.000																		
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273.300	273.300	100.000																																		
Tin				7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	3.416	12,500	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>273.300</td> <td>273.300</td> <td>100.000</td> </tr> </table>				<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	273.300	273.300	100.000																		
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273.300	273.300	100.000																																		
<b>0.2733 g Total Mass</b>						<b>TOTALS:</b>	<b>100.000</b>	<b>273.300</b>	<b>1,000,000</b>																											

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offers/industries/chemicals/plastics/>

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Semiconductor Device Type: PT 64 (Lead) TQFP 10x10x1mm (V2)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous	60676-86-0	Mold Compound
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Nickel	7440-02-0	Lead Frame
Silver	7440-22-4	Lead Frame
Silicon	7440-21-3	Lead Frame
Magnesium	7439-95-4	Lead Frame
Silver (Ag)	7440-22-4	Die Attach
Acrylate Urethane Oligomer	General	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
<b>TOTALS:</b>		
<b>0.2867 g Total Mass</b>		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
69.354	198.838	693.542
6.121	17.548	61.207
4.078	11.691	40.778
0.247	0.709	2.474
10.000	28.671	100.003
0.267	0.765	2,667
0.175	0.502	1,752
0.047	0.135	473
0.011	0.030	105
0.600	1.720	6,000
0.150	0.430	1,500
7.500	21.503	75,000
0.200	0.573	2,000
1.250	3.584	12,500
<b>100.000</b>	<b>286.700</b>	<b>1,000,000</b>

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
228.79	(mg) Total	Mold Compound	% of Total Weight	79.8
	Silica, vitreous	60676-86-0	86.91	
	Epoxy Resin	Trade Secret	7.67	
	Phenolic Resin	Trade Secret	5.11	
	Carbon Black	1333-86-4	0.31	
	<b>Total</b>			<b>100.00</b>
30.10	(mg) Total	Lead Frame	% of Total Weight	10.5
	Copper	7440-50-8	95.24	
	Nickel	7440-02-0	2.54	
	Silver	7440-22-4	1.67	
	Silicon	7440-21-3	0.45	
	Magnesium	7439-95-4	0.10	
	<b>Total</b>			<b>100.00</b>
2.15	(mg) Total	Die Attach	% of Total Weight	0.75
	Silver (Ag)	7440-22-4	80	
	Acrylate Urethane Oligomer	General	20	
	<b>Total</b>			<b>100.00</b>
21.50	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
	<b>Total</b>			<b>100.00</b>
0.57	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
	<b>Total</b>			<b>100.00</b>
3.58	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
	Tin	7440-31-5	100.00	
	<b>Total</b>			<b>100.00</b>
<b>286.700</b>	<b>Total</b>			<b>100.000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

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Semiconductor Device Type: PT 64 (Lead) TQFP 14x14x1mm (V3 / VH)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3			
<b>Basic Substance</b>				<b>CAS Number</b>	<b>"Contained In" Sub-Component</b>	<b>% Total Weight</b>	<b>mg/part</b>	<b>ppm</b>	289.33	(mg) Total	Mold Compound	% of Total Weight	53.58
Silica, vitreous (or fused)	60676-86-0	Mold Compound	45.543	245.932	455.430					Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	4.661	25.172	46.615					Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.215	17.360	32.148					Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.161	0.868	1.607					Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	32.381	174.856	323.807								
Tin	7440-31-5	Lead Frame	0.083	0.449	831								
Silver	7440-22-4	Lead Frame	0.633	3.419	6.332								
Zinc	7440-66-6	Lead Frame	0.060	0.323	598								
Chromium	7440-47-3	Lead Frame	0.083	0.449	831								
Silver (Ag)	7440-22-4	Die Attach	1.129	6.096	11,288								
ANHYDRIDE	Trade Secret	Die Attach	0.122	0.661	1,224								
EPOXY RESIN	Trade Secret	Die Attach	0.109	0.588	1,088								
Silicon	7440-21-3	Chip (Die)	10.540	56.916	105,400								
Gold	7440-57-5	Wire Bond	0.340	1.836	3,400								
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.940	5.076	9,400								
<b>TOTALS:</b>						<b>100.000</b>	<b>540.000</b>	<b>1,000,000</b>					
<b>0.5400 g Total Mass</b>													
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).													
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.													
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									179.50	(mg) Total	Lead Frame	% of Total Weight	33.24
										Copper	7440-50-8	97.42	
										Tin	7440-31-5	0.25	
										Silver	7440-22-4	1.91	
										Zinc	7440-66-6	0.18	
										Chromium	7440-47-3	0.25	
										<b>Total</b>			<b>100.00</b>
									7.34	(mg) Total	Die Attach	% of Total Weight	1.36
										Silver (Ag)	7440-22-4	83	
										ANHYDRIDE	Trade Secret	9	
										EPOXY RESIN	Trade Secret	8	
										<b>Total</b>			<b>100.00</b>
									56.92	Total (mg)	Chip (Die)	% of Total Weight	10.54
										Doped Silicon	7440-21-3	100	
										<b>Total</b>			<b>100.00</b>
									1.84	(mg) Total	Wire Bond	% of Total Weight	0.34
										Doped Gold	7440-57-5	100	
										<b>Total</b>			<b>100.00</b>
									5.08	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	0.94
										Tin	7440-31-5	100.00	
										<b>Total</b>			<b>100.00</b>
									<b>540.000</b>	<b>Total</b>			<b>100.000</b>



Semiconductor Device Type: PT 80 (Lead) TQFP 12x12x1mm (X2)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3		
				% Total Weight	mg/part	ppm	292.63	(mg) Total	Mold Compound	% of Total Weight	79.8	
Basic Substance	CAS Number	"Contained In" Sub-Component										
Silica, vitreous	60676-86-0	Mold Compound		69.354	254.322	693.542		Silica, vitreous	60676-86-0	86.91		
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound		6.121	22.444	61.207		Epoxy Resin	Trade Secret	7.67		
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound		4.078	14.953	40.778		Phenolic Resin	Trade Secret	5.11		
Carbon Black	1333-86-4	Mold Compound		0.247	0.907	2,474		Carbon Black	1333-86-4	0.31		
Copper	7440-50-8	Lead Frame		10.000	36.671	100,003		<b>Total</b>			<b>100.00</b>	
Nickel	7440-02-0	Lead Frame		0.267	0.978	2,667	<b>38.50</b>	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>	
Silver	7440-22-4	Lead Frame		0.175	0.643	1,752		Copper	7440-50-8	95.24		
Silicon	7440-21-3	Lead Frame		0.047	0.173	473		Nickel	7440-02-0	2.54		
Magnesium	7439-95-4	Lead Frame		0.011	0.039	105		Silver	7440-22-4	1.67		
Silver (Ag)	7440-22-4	Die Attach		0.600	2.200	6,000		Silicon	7440-21-3	0.45		
Acrylate Urethane Oligomer	General	Die Attach		0.150	0.550	1,500		Magnesium	7439-95-4	0.10		
Silicon	7440-21-3	Chip (Die)		7.500	27.503	75,000		<b>Total</b>			<b>100.00</b>	
Gold	7440-57-5	Wire Bond		0.200	0.733	2,000	<b>2.75</b>	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		1.250	4.584	12,500		Silver (Ag)	7440-22-4	80		
<b>0.3667 g Total Mass</b>				<b>TOTALS:</b>	<b>100.000</b>	<b>366.700</b>	<b>1,000,000</b>	Acrylate Urethane Oligomer	General	20		
								<b>Total</b>			<b>100.00</b>	
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).								<b>27.50</b>	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.5</b>
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.								Doped Silicon	7440-21-3	100		
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								<b>Total</b>			<b>100.00</b>	
							<b>366.700</b>				<b>100.000</b>	



Semiconductor Device Type: PF 80 (Lead) TQFP 14x14mm (X3/XE)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	306.01	(mg) Total	Mold Compound	% of Total Weight	57.52
Silica, vitreous (or fused)	60676-86-0	Mold Compound	48.892	260.105	488.920		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	5.004	26.623	50.042		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	3.451	18.360	34.512		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.173	0.918	1.726		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	31.426	167.187	314.261		<b>Total 100.00</b>			
Tin	7440-31-5	Lead Frame	0.081	0.429	807	171.62	(mg) Total	Lead Frame	% of Total Weight	32.26
Silver	7440-22-4	Lead Frame	0.615	3.269	6.146		Copper	7440-50-8	97.42	
Zinc	7440-66-6	Lead Frame	0.058	0.309	581		Tin	7440-31-5	0.25	
Chromium	7440-47-3	Lead Frame	0.081	0.429	807		Silver	7440-22-4	1.91	
Silver (Ag)	7440-22-4	Die Attach	0.830	4.416	8,300		Zinc	7440-66-6	0.18	
ANHYDRIDE	Trade Secret	Die Attach	0.090	0.479	900		Chromium	7440-47-3	0.25	
EPOXY RESIN	Trade Secret	Die Attach	0.080	0.426	800		<b>Total 100.00</b>			
Silicon	7440-21-3	Chip (Die)	7.650	40.698	76,500	5.32	(mg) Total	Die Attach	% of Total Weight	1
Gold	7440-57-5	Wire Bond	0.370	1.968	3,700		Silver (Ag)	7440-22-4	83	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.200	6.384	12,000		ANHYDRIDE	Trade Secret	9	
<b>0.5320 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>532.000</b>	<b>1,000.000</b>	<b>Total 100.00</b>			
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						40.70	Total (mg)	Chip (Die)	% of Total Weight	7.65
							Doped Silicon	7440-21-3	100	
						<b>Total 100.00</b>				
						1.97	(mg) Total	Wire Bond	% of Total Weight	0.37
							Doped Gold	7440-57-5	100	
						<b>Total 100.00</b>				
						6.38	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.2
							Tin	7440-31-5	100.00	
						<b>Total 100.00</b>				
						532.000				100.000



Semiconductor Device Type: PF 100 (Lead) TQFP 12x12x1mm (V7)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	312.02	(mg) Total	Mold Compound	% of Total Weight	79.8
Silica, vitreous	60676-86-0	Mold Compound	69.354	271.175	693,542		Silica, vitreous	60676-86-0	86.91	
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	23.932	61,207		Epoxy Resin	Trade Secret	7.67	
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	15.944	40,778		Phenolic Resin	Trade Secret	5.11	
Carbon Black	1333-86-4	Mold Compound	0.247	0.967	2,474		Carbon Black	1333-86-4	0.31	
Copper	7440-50-8	Lead Frame	10.000	39.101	100,003		<b>Total</b>			<b>100.00</b>
Nickel	7440-02-0	Lead Frame	0.267	1.043	2,667	41.06	(mg) Total	Lead Frame	% of Total Weight	10.5
Silver	7440-22-4	Lead Frame	0.175	0.685	1,752		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.047	0.185	473		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.011	0.041	105		Silver	7440-22-4	1.67	
Silver (Ag)	7440-22-4	Die Attach	0.600	2.346	6,000		Silicon	7440-21-3	0.45	
Acrylate Urethane Oligomer	General	Die Attach	0.150	0.587	1,500		Magnesium	7439-95-4	0.10	
Silicon	7440-21-3	Chip (Die)	7.500	29.325	75,000		<b>Total</b>			<b>100.00</b>
Gold	7440-57-5	Wire Bond	0.200	0.782	2,000	2.93	(mg) Total	Die Attach	% of Total Weight	0.75
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	4.888	12,500		Silver (Ag)	7440-22-4	80	
<b>TOTALS:</b>			<b>100.000</b>	<b>391.000</b>	<b>1,000,000</b>		Acrylate Urethane Oligomer	General	20	
<b>0.3910 g Total Mass</b>							<b>Total</b>			<b>100.00</b>

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312.02	(mg) Total	Mold Compound	% of Total Weight	79.8
41.06	(mg) Total	Lead Frame	% of Total Weight	10.5
2.93	(mg) Total	Die Attach	% of Total Weight	0.75
29.33	Total (mg)	Chip (Die)	% of Total Weight	7.5
0.78	(mg) Total	Wire Bond	% of Total Weight	0.2
4.89	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
391.000	Total		100.00	100.000



Semiconductor Device Type: PF 100 (Lead) TQFP 14x14mm (X5 / EQ)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3				
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight					
Silica, vitreous (or fused)	60676-86-0	Mold Compound	58.089	288.702	580.890	339.65	Silica, vitreous (or fused)	60676-86-0	85.00	68.34			
Epoxy Resin	Trade Secret	Mold Compound	5.946	29.550	59.456		Epoxy Resin	Trade Secret	8.70				
Phenolic Resin	Trade Secret	Mold Compound	4.100	20.379	41.004		Phenolic Resin	Trade Secret	6.00				
Carbon Black	1333-86-4	Mold Compound	0.205	1.019	2.050		Carbon Black	1333-86-4	0.30				
			<b>Total</b>				<b>100.00</b>						
Copper	7440-50-8	Lead Frame	26.156	129.995	261.559	133.44	<b>(mg) Total</b>		<b>Lead Frame</b>	<b>% of Total Weight</b>	26.85		
Tin	7440-31-5	Lead Frame	0.067	0.334	67.1		Copper	7440-50-8	97.42				
Silver	7440-22-4	Lead Frame	0.511	2.542	5.115		Tin	7440-31-5	0.25				
Zinc	7440-66-6	Lead Frame	0.048	0.240	48.3		Silver	7440-22-4	1.91				
Chromium	7440-47-3	Lead Frame	0.067	0.334	67.1		Zinc	7440-66-6	0.18				
Silver (Ag)	7440-22-4	Die Attach	0.481	2.393	4.814	Chromium	7440-47-3	0.25	<b>Total</b>		<b>100.00</b>		
ANHYDRIDE	Trade Secret	Die Attach	0.052	0.259	52.2	2.88	<b>(mg) Total</b>		<b>Die Attach</b>	<b>% of Total Weight</b>	0.58		
EPOXY RESIN	Trade Secret	Die Attach	0.046	0.231	46.4		Silver (Ag)	7440-22-4	83				
Silicon	7440-21-3	Chip (Die)	2.710	13.469	27.100		ANHYDRIDE	Trade Secret	9				
Gold	7440-57-5	Wire Bond	0.420	2.087	4.200		EPOXY RESIN	Trade Secret	8	<b>Total</b>		<b>100.00</b>	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.100	5.467	11.000								
<b>0.4970 g Total Mass</b>			<b>TOTALS:</b>			<b>100.000</b>	<b>497.000</b>	<b>1,000,000</b>					
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).													
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						13.47	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	2.71			
							Doped Silicon	7440-21-3	100				
						<b>Total</b>		<b>100.00</b>					
						2.09	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	0.42			
							Doped Gold	7440-57-5	100				
						<b>Total</b>		<b>100.00</b>					
						5.47	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	1.1			
							Tin	7440-31-5	100.00				
						<b>Total</b>		<b>100.00</b>					
						<b>497.000</b>				<b>100.000</b>			



Semiconductor Device Type: PH 144 (Lead) TQFP 16x16x1mm (R9)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	
Silica, vitreous (or fused)	60676-86-0	Mold Compound	57.996	397.559	579.955	
Epoxy Resin	Trade Secret	Mold Compound	5.936	40.691	59.360	
Phenolic Resin	Trade Secret	Mold Compound	4.094	28.063	40.938	
Carbon Black	1333-86-4	Mold Compound	0.205	1.403	2.047	
Copper	7440-50-8	Lead Frame	26.955	184.775	269.547	
Tin	7440-31-5	Lead Frame	0.069	0.474	692	
Silver	7440-22-4	Lead Frame	0.527	3.613	5.271	
Zinc	7440-66-6	Lead Frame	0.050	0.341	498	
Chromium	7440-47-3	Lead Frame	0.069	0.474	692	
Silver (Ag)	7440-22-4	Die Attach	0.423	2.902	4.233	
ANHYDRIDE	Trade Secret	Die Attach	0.046	0.315	459	
EPOXY RESIN	Trade Secret	Die Attach	0.041	0.280	408	
Silicon	7440-21-3	Chip (Die)	2.090	14.327	20.900	
Doped Gold	7440-57-5	Wire Bond	0.280	1.919	2.800	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.220	8.363	12.200	
<b>0.6855 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>685.500</b>	<b>1,000,000</b>

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Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
			467.72 (mg) Total			68.23
			Mold Compound			
			Silica, vitreous (or fused)			85.0000
			Epoxy Resin			8.7000
			Phenolic Resin			6.0000
			Carbon Black			0.3000
			Total			100.00
			189.68 (mg) Total			27.67
			Lead Frame			
			Copper			97.42
			Tin			0.25
			Silver			1.91
			Zinc			0.18
			Chromium			0.25
			Total			100.00
			3.50 (mg) Total			0.51
			Die Attach			
			Silver (Ag)			83.00
			ANHYDRIDE			9.00
			EPOXY RESIN			8.00
			Total			100.00
			14.33 (mg) Total			2.09
			Chip (Die)			
			Doped Silicon			100
			Total			100.00
			1.92 (mg) Total			0.28
			Wire Bond			
			Doped Gold			100.00
			Total			100.00
			8.36 (mg) Total			1.22
			Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			
			Tin			100.00
			Total			100.00
			685.500			100.000



Semiconductor Device Type: **ST 08** (Lead) **TSSOP** 4.4mm (C5 / CN / A4)

Basic Substance	CAS Number	"Contained In" Sub-Component	Termination Base Alloy: Copper Alloy (Cu)		
			% Total Weight	mg/part	ppm
Silica, vitreous	60676-86-0	Mold Compound	50.201	16.566	502,010
Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	3.617	1.194	36,174
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	3.617	1.194	36,174
Epoxy, Cresol Novolac	29690-82-2	Mold Compound	1.447	0.478	14,470
Carbon Black	1333-86-4	Mold Compound	0.177	0.058	1,772
Copper	7440-50-8	Lead Frame	30.020	9.907	300,200
Nickel	7440-02-0	Lead Frame	0.801	0.264	8,006
Silver	7440-22-4	Lead Frame	0.526	0.174	5,261
Silicon	7440-21-3	Lead Frame	0.142	0.047	1,418
Magnesium	7439-95-4	Lead Frame	0.032	0.010	315
Silver	7440-22-4	Die Attach	0.840	0.277	8,400
Diester Resin	94-80-4	Die Attach	0.168	0.055	1,680
Functionalized Urethane Resin	72869-86-4	Die Attach	0.056	0.018	560
Epoxy Resin	9003-36-5	Die Attach	0.028	0.009	280
Epoxy Resin	13561-08-5	Die Attach	0.028	0.009	280
Silicon	7440-21-3	Chip (Die)	6.300	2.079	63,000
Gold	7440-57-5	Wire Bond	0.180	0.059	1,800
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.820	0.601	18,200
<b>TOTALS:</b>			<b>100.000</b>	<b>33.000</b>	<b>1,000,000</b>

**0.0330 g Total Mass**

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Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																		
19.49	(mg) Total	Mold Compound	59.06																		
		<table border="1"> <tr> <td>Silica, vitreous</td> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>6.13</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>6.13</td> </tr> <tr> <td>Epoxy, Cresol Novolac</td> <td>29690-82-2</td> <td>2.45</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>	Silica, vitreous	60676-86-0	85.00	Epoxy Resin	Trade Secret	6.13	Phenolic Resin	Trade Secret	6.13	Epoxy, Cresol Novolac	29690-82-2	2.45	Carbon Black	1333-86-4	0.30	<b>Total</b>		<b>100.00</b>	
Silica, vitreous	60676-86-0	85.00																			
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Epoxy, Cresol Novolac	29690-82-2	2.45																			
Carbon Black	1333-86-4	0.30																			
<b>Total</b>		<b>100.00</b>																			
10.40	(mg) Total	Lead Frame	31.52																		
		<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.67</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>0.10</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>	Copper	7440-50-8	95.24	Nickel	7440-02-0	2.54	Silver	7440-22-4	1.67	Silicon	7440-21-3	0.45	Magnesium	7439-95-4	0.10	<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	95.24																			
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Magnesium	7439-95-4	0.10																			
<b>Total</b>		<b>100.00</b>																			
0.37	(mg) Total	Die Attach	1.12																		
		<table border="1"> <tr> <td>Silver</td> <td>7440-22-4</td> <td>75</td> </tr> <tr> <td>Diester Resin</td> <td>94-80-4</td> <td>15</td> </tr> <tr> <td>Functionalized Urethane Resin</td> <td>72869-86-4</td> <td>5</td> </tr> <tr> <td>Epoxy Resin</td> <td>9003-36-5</td> <td>3</td> </tr> <tr> <td>Epoxy Resin</td> <td>13561-08-5</td> <td>3</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>	Silver	7440-22-4	75	Diester Resin	94-80-4	15	Functionalized Urethane Resin	72869-86-4	5	Epoxy Resin	9003-36-5	3	Epoxy Resin	13561-08-5	3	<b>Total</b>		<b>100.00</b>	
Silver	7440-22-4	75																			
Diester Resin	94-80-4	15																			
Functionalized Urethane Resin	72869-86-4	5																			
Epoxy Resin	9003-36-5	3																			
Epoxy Resin	13561-08-5	3																			
<b>Total</b>		<b>100.00</b>																			
2.08	Total (mg)	Chip (Die)	6.3																		
		<table border="1"> <tr> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>	Doped Silicon	7440-21-3	100	<b>Total</b>		<b>100.00</b>													
Doped Silicon	7440-21-3	100																			
<b>Total</b>		<b>100.00</b>																			
0.06	(mg) Total	Wire Bond	0.18																		
		<table border="1"> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>	Doped Gold	7440-57-5	100	<b>Total</b>		<b>100.00</b>													
Doped Gold	7440-57-5	100																			
<b>Total</b>		<b>100.00</b>																			
0.60	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.82																		
		<table border="1"> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="2" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>	Tin	7440-31-5	100.00	<b>Total</b>		<b>100.00</b>													
Tin	7440-31-5	100.00																			
<b>Total</b>		<b>100.00</b>																			
<b>33.000 mg</b>			<b>100.000</b>																		





Semiconductor Device Type: ST 14 (Lead) TSSOP 4.4mm (D4 / DH)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																						
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	28.10	(mg) Total	Mold Compound	% of Total Weight	46.84																						
Silica, vitreous (or fused)	60676-86-0	Mold Compound	39.814	23.888	398,140	<table border="1"> <tr> <td>Silica, vitreous (or fused)</td> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>8.70</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>6.00</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>3.00</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			Silica, vitreous (or fused)	60676-86-0	85.00	Epoxy Resin	Trade Secret	8.70	Phenolic Resin	Trade Secret	6.00	Carbon Black	1333-86-4	3.00	<b>Total</b>			<b>100.00</b>								
Silica, vitreous (or fused)	60676-86-0	85.00																														
Epoxy Resin	Trade Secret	8.70																														
Phenolic Resin	Trade Secret	6.00																														
Carbon Black	1333-86-4	3.00																														
<b>Total</b>			<b>100.00</b>																													
Copper	7440-50-8	Lead Frame	43.249	25.949	432,489	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Lead Frame</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.67</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>0.10</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	Copper	7440-50-8	95.24	Nickel	7440-02-0	2.54	Silver	7440-22-4	1.67	Silicon	7440-21-3	0.45	Magnesium	7439-95-4	0.10	<b>Total</b>			<b>100.00</b>	27.25	45.41
<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>																														
Copper	7440-50-8	95.24																														
Nickel	7440-02-0	2.54																														
Silver	7440-22-4	1.67																														
Silicon	7440-21-3	0.45																														
Magnesium	7439-95-4	0.10																														
<b>Total</b>			<b>100.00</b>																													
Nickel	7440-02-0	Lead Frame	1.153	0.692	11,534	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Die Attach</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>74</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>20</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>3</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>3</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>3</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	Copper	7440-50-8	74	Nickel	7440-02-0	20	Silver	7440-22-4	3	Silicon	7440-21-3	3	Magnesium	7439-95-4	3	<b>Total</b>			<b>100.00</b>	0.98	1.64
<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>																														
Copper	7440-50-8	74																														
Nickel	7440-02-0	20																														
Silver	7440-22-4	3																														
Silicon	7440-21-3	3																														
Magnesium	7439-95-4	3																														
<b>Total</b>			<b>100.00</b>																													
Silver	7440-22-4	Die Attach	1.214	0.728	12,136	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Epoxy resin</td> <td>Trade Secret</td> <td>74</td> </tr> <tr> <td>Metal oxide</td> <td>Trade Secret</td> <td>20</td> </tr> <tr> <td>Gamma-butyrolactone</td> <td>96-48-0</td> <td>3</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	Epoxy resin	Trade Secret	74	Metal oxide	Trade Secret	20	Gamma-butyrolactone	96-48-0	3	<b>Total</b>			<b>100.00</b>	2.00	3.34						
<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>																														
Epoxy resin	Trade Secret	74																														
Metal oxide	Trade Secret	20																														
Gamma-butyrolactone	96-48-0	3																														
<b>Total</b>			<b>100.00</b>																													
Epoxy resin	Trade Secret	Die Attach	0.328	0.197	3,280	<table border="1"> <tr> <td><b>Total (mg)</b></td> <td><b>Chip (Die)</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	Doped Silicon	7440-21-3	100	<b>Total</b>			<b>100.00</b>														
<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>																														
Doped Silicon	7440-21-3	100																														
<b>Total</b>			<b>100.00</b>																													
Metal oxide	Trade Secret	Die Attach	0.049	0.030	492	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Gamma-butyrolactone</td> <td>96-48-0</td> <td>3</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	Gamma-butyrolactone	96-48-0	3	<b>Total</b>			<b>100.00</b>	0.29	0.49												
<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>																														
Gamma-butyrolactone	96-48-0	3																														
<b>Total</b>			<b>100.00</b>																													
Gamma-butyrolactone	96-48-0	Die Attach	0.049	0.030	492	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Wire Bond</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	Doped Gold	7440-57-5	100	<b>Total</b>			<b>100.00</b>														
<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>																														
Doped Gold	7440-57-5	100																														
<b>Total</b>			<b>100.00</b>																													
Silicon	7440-21-3	Chip (Die)	3.340	2.004	33,400	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td></td> <td>2.28</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		2.28	<b>Total</b>			<b>100.00</b>	1.37	2.28												
<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>																														
Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour		2.28																														
<b>Total</b>			<b>100.00</b>																													
Gold	7440-57-5	Wire Bond	0.490	0.294	4,900	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	Tin	7440-31-5	100.00	<b>Total</b>			<b>100.00</b>														
<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>																														
Tin	7440-31-5	100.00																														
<b>Total</b>			<b>100.00</b>																													
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.280	1.368	22,800	<table border="1"> <tr> <td><b>(mg) Total</b></td> <td><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td><b>% of Total Weight</b></td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>			<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	Tin	7440-31-5	100.00	<b>Total</b>			<b>100.00</b>														
<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>																														
Tin	7440-31-5	100.00																														
<b>Total</b>			<b>100.00</b>																													
<b>0.0600 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>60.000</b>	<b>1,000,000</b>				<b>60.000</b>																						

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

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The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Semiconductor Device Type: ST 16 (Lead) TSSOP 4.4mm (D8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	22.50	(mg) Total	Mold Compound	% of Total Weight	34.62
Silica, vitreous (or fused)	60676-86-0	Mold Compound	29.427	19.128	294,270		Silica, vitreous (or fused)	60676-86-0	85.00	
Epoxy Resin	Trade Secret	Mold Compound	3.012	1.958	30,119		Epoxy Resin	Trade Secret	8.70	
Phenolic Resin	Trade Secret	Mold Compound	2.077	1.350	20,772		Phenolic Resin	Trade Secret	6.00	
Carbon Black	1333-86-4	Mold Compound	0.104	0.068	1,039		Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	44.468	28.904	444,680		<b>Total</b>			<b>100.00</b>
Nickel	7440-02-0	Lead Frame	1.186	0.771	11,859	30.35	(mg) Total	Lead Frame	% of Total Weight	46.69
Silver	7440-22-4	Lead Frame	0.779	0.507	7,793		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.210	0.137	2,101		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.047	0.030	467		Silver	7440-22-4	1.67	
Silver	7440-22-4	Die Attach	2.472	1.607	24,716		Silicon	7440-21-3	0.45	
Epoxy resin	Trade Secret	Die Attach	0.668	0.434	6,680		Magnesium	7439-95-4	0.10	
Metal oxide	Trade Secret	Die Attach	0.100	0.065	1,002		<b>Total</b>			<b>100.00</b>
Gamma-butyrolactone	96-48-0	Die Attach	0.100	0.065	1,002	2.17	(mg) Total	Die Attach	% of Total Weight	3.34
Silicon	7440-21-3	Chip (Die)	12.340	8.021	123,400		Silver	7440-22-4	74	
Gold	7440-57-5	Wire Bond	0.610	0.397	6,100		Epoxy resin	Trade Secret	20	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	2.400	1.560	24,000		Metal oxide	Trade Secret	3	
<b>0.0650 g Total Mass</b>			<b>TOTALS:</b>			<b>100.000</b>	<b>65.000</b>	<b>1,000,000</b>		
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						8.02	Total (mg)	Chip (Die)	% of Total Weight	12.34
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.							Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.						<b>Total</b>			<b>100.00</b>	
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>						0.40	(mg) Total	Wire Bond	% of Total Weight	0.61
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.							Doped Gold	7440-57-5	100	
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.						<b>Total</b>			<b>100.00</b>	
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						1.56	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.4
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.							Tin	7440-31-5	100.00	
						<b>Total</b>			<b>100.00</b>	
						<b>65.000</b>				<b>100.000</b>



Semiconductor Device Type: ST 20 (Lead) TSSOP 4.4mm (G2 / GE)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous (or fused)	60676-86-0	Mold Compound
Epoxy Resin	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Nickel	7440-02-0	Lead Frame
Silver	7440-22-4	Lead Frame
Silicon	7440-21-3	Lead Frame
Magnesium	7439-95-4	Lead Frame
Silver	7440-22-4	Die Attach
Epoxy resin	Trade Secret	Die Attach
Metal oxide	Trade Secret	Die Attach
Gamma-butyrolactone	96-48-0	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour
<b>TOTALS:</b>		
<b>0.0780 g Total Mass</b>		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
40.562	31.638	405,620
4.152	3.238	41,516
2.863	2.233	28,632
0.143	0.112	1,432
40.725	31.766	407,251
1.086	0.847	10,861
0.714	0.557	7,137
0.192	0.150	1,924
0.043	0.033	428
1.317	1.027	13,172
0.356	0.278	3,560
0.053	0.042	534
0.053	0.042	534
4.690	3.658	46,900
0.540	0.421	5,400
2.510	1.958	25,100
<b>100.000</b>	<b>78.000</b>	<b>1,000,000</b>

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)				JEDEC 97 Product Marking and/or Pkg. Labeling e3
37.22	(mg) Total	Mold Compound	% of Total Weight	47.72
	Silica, vitreous (or fused)	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	8.70	
	Phenolic Resin	Trade Secret	6.00	
	Carbon Black	1333-86-4	0.30	
	<b>Total</b>			<b>100.00</b>
33.35	(mg) Total	Lead Frame	% of Total Weight	42.76
	Copper	7440-50-8	95.24	
	Nickel	7440-02-0	2.54	
	Silver	7440-22-4	1.67	
	Silicon	7440-21-3	0.45	
	Magnesium	7439-95-4	0.10	
	<b>Total</b>			<b>100.00</b>
1.39	(mg) Total	Die Attach	% of Total Weight	1.78
	Silver	7440-22-4	74	
	Epoxy resin	Trade Secret	20	
	Metal oxide	Trade Secret	3	
	Gamma-butyrolactone	96-48-0	3	
	<b>Total</b>			<b>100.00</b>
3.66	Total (mg)	Chip (Die)	% of Total Weight	4.69
	Doped Silicon	7440-21-3	100	
	<b>Total</b>			<b>100.00</b>
0.42	(mg) Total	Wire Bond	% of Total Weight	0.54
	Doped Gold	7440-57-5	100	
	<b>Total</b>			<b>100.00</b>
1.96	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	2.51
	Tin	7440-31-5	100.00	
	<b>Total</b>			<b>100.00</b>
<b>78.000</b>				<b>100.000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.

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Semiconductor Device Type: QU8E 08 (Lead) USON/UDFN 2x2x0.55mm (QN)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	9.40 (mg) Total	Mold Compound	% of Total Weight	75.18	
Silica, fused	60676-86-0	Mold Compound	67.662	8.458	676,620	9.40 (mg) Total	Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3.646	0.456	36,462		Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.646	0.456	36,462		Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.226	0.028	2,255		Carbon Black	1333-86-4	0.30	
						<b>Total 100.00</b>				
Copper	7440-50-8	Lead Frame	20.505	2.563	205,054	2.69 (mg) Total	Lead Frame			
Nickel	7440-02-0	Lead Frame	0.547	0.068	5,469		Copper	7440-50-8	95.24	
Silicon	7440-21-3	Lead Frame	0.097	0.012	969		Nickel	7440-02-0	2.54	
Magnesium	7439-95-4	Lead Frame	0.022	0.003	215		Silicon	7440-21-3	0.45	
Silver	7440-22-4	Lead Frame	0.359	0.045	3,593	Magnesium	7439-95-4	0.10		
Silver	7440-22-4	Die Attach	0.800	0.100	8,000	Silver	7440-22-4	1.67		
Epoxy Resin	Trade secret	Die Attach	0.200	0.025	2,000	<b>Total 100.00</b>				
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	1.090	0.136	10,900	0.13 (mg) Total	Die Attach			
Doped Gold	7440-57-5	Wire Bond	0.310	0.039	3,100		Silver	7440-22-4	80.00	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	0.890	0.111	8,900	Epoxy Resin	Trade secret	20.00		
<b>TOTALS: 100.000 12.500 1,000,000</b>						<b>Total 100.00</b>				
<b>0.0125 g Total Mass</b>						0.14 (mg) Total	Chip (Die)			1.09
							Gallium arsenide	1303-00-0	100	
						<b>Total 100.00</b>				
						0.04 (mg) Total	Wire Bond			0.31
							Doped Gold	7440-57-5	100.00	
						<b>Total 100.00</b>				
						0.11 (mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			0.89
							Tin	7440-31-5	100.00	
						<b>Total 100.00</b>				
						<b>12.500</b>				<b>100.000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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| Semiconductor Device Type: <b>QUAE 08 (Lead) USON 2x2x0.55mm (UA)</b>              |              |   |   | Termination Base Alloy:<br>Copper Alloy (Cu)   |  |  | Package Homogeneous Materials:<br>8.1 Electronics (e.g. pc boards, displays)  
  |  |              | JEDEC 97<br>Product Marking<br>and/or Pkg.<br>Labeling<br>e3  |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               | | | | | | | |
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| Basic Substance  | CAS Number   | "Contained In"<br>Sub-Component   | % Total<br>Weight   | mg/part  | ppm  | 9.40 (mg) Total  | Mold Compound   
  | % of Total Weight  | 75.18        |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Silica, fused  | 60676-86-0   | Mold Compound   | 67.662  | 8.458  | 676,620  | <table border="1"> <tr> <td>Silica, fused</td> <td>60676-86-0</td> <td>90.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>4.85</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>4.85</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>   | Silica, fused   
  | 60676-86-0   | 90.00        | Epoxy Resin   | Trade Secret   | 4.85         | Phenolic Resin | Trade Secret   | 4.85                     | Carbon Black | 1333-86-4    | 0.30   | <b>Total</b>  |              |           | <b>100.00</b> | <table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>0.10</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.67</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> | Copper    | 7440-50-8     | 95.24        | Nickel    | 7440-02-0     | 2.54   | Silicon                | 7440-21-3     | 0.45   
   | Magnesium   | 7439-95-4  | 0.10   | Silver  | 7440-22-4   | 1.67  
  | <b>Total</b>  |  |   | <b>100.00</b>   | <table border="1"> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>  | Silver  | 7440-22-4   
  | 80.00  | Epoxy Resin   | Trade secret           | 20.00  | <b>Total</b>  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
  |                   | <b>100.00</b>   | <table border="1"> <tr> <td>Gallium arsenide</td> <td>1303-00-0</td> <td>100</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> | Gallium arsenide   | 1303-00-0                | 100           | <b>Total</b>  |  |               | <b>100.00</b> | <table border="1"> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>   | Doped Gold   | 7440-57-5  | 100.00         | <b>Total</b>  |   
  |  | <b>100.00</b>  | <table border="1"> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> | Tin   | 7440-31-5   | 100.00                   | <b>Total</b>   |   |   | <b>100.00</b> |   |  
   |                        |           |   |   |  |                          |                            |  |   |                |                |   |                  |  |                |                |  |  |                |                         |  |                |                         |            |            |   
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| Silica, fused  | 60676-86-0   | 90.00   |   |  |  |  |   
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| Epoxy Resin  | Trade Secret | 4.85  |   |  |  |  |   
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| Phenolic Resin   | Trade Secret | 4.85  |   |  |  |  |   
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| Carbon Black   | 1333-86-4    | 0.30  |   |  |  |  |   
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| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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| Copper   | 7440-50-8    | 95.24   |   |  |  |  |   
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| Nickel   | 7440-02-0    | 2.54  |   |  |  |  |   
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| Silicon  | 7440-21-3    | 0.45  |   |  |  |  |   
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| Magnesium  | 7439-95-4    | 0.10  |   |  |  |  |   
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| Silver   | 7440-22-4    | 1.67  |   |  |  |  |   
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| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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| Silver   | 7440-22-4    | 80.00   |   |  |  |  |   
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| Epoxy Resin  | Trade secret | 20.00   |   |  |  |  |   
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| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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| Gallium arsenide   | 1303-00-0    | 100   |   |  |  |  |   
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| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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| Doped Gold   | 7440-57-5    | 100.00  |   |  |  |  |   
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| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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| Tin  | 7440-31-5    | 100.00  |   |  |  |  |   
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| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Epoxy Resin  | Trade Secret | Mold Compound   | 3.646   | 0.456  | 36,462   | <table border="1"> <tr> <td colspan="3"><b>2.69 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Lead Frame</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>21.53</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>0.10</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.67</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>Mold Compound</td> <td>3.646</td> <td>0.456</td> <td>36,462</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.13 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Die Attach</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table> </td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>Mold Compound</td> <td>0.226</td> <td>0.028</td> <td>2,255</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.04 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Wire Bond</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>20.505</td> <td>2.563</td> <td>205,054</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table> | <b>2.69 (mg) Total</b>  
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   | 0.10  | Silver   | 7440-22-4  | 1.67  | <b>Total</b>  |   
  |   | <b>100.00</b>  | Phenolic Resin  | Trade Secret  | Mold Compound   | 3.646   | 0.456   
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| <b>2.69 (mg) Total</b>   |              |   | <table border="1"> <tr> <td colspan="3"><b>Lead Frame</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>21.53</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>0.10</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.67</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>Mold Compound</td> <td>3.646</td> <td>0.456</td> <td>36,462</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.13 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Die Attach</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table> </td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>Mold Compound</td> <td>0.226</td> <td>0.028</td> <td>2,255</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.04 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Wire Bond</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>20.505</td> <td>2.563</td> <td>205,054</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table> | <b>Lead Frame</b>  |  |  | <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>21.53</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr>
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   |   | <b>100.00</b>  | Phenolic Resin   | Trade Secret  | Mold Compound   | 3.646   
  | 0.456   | 36,462   | <table border="1"> <tr> <td colspan="3"><b>0.13 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Die Attach</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table> </td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>Mold Compound</td> <td>0.226</td> <td>0.028</td> <td>2,255</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.04 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Wire Bond</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>20.505</td> <td>2.563</td> <td>205,054</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table> | <b>0.13 (mg) Total</b>  |   |   | <table border="1"> <tr> <td colspan="3"><b>Die Attach</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4">
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  | Carbon Black   | 1333-86-4      | Mold Compound   | 0.226   | 0.028   | 2,255                    | <table border="1"> <tr> <td colspan="3"><b>0.04 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Wire Bond</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>20.505</td> <td>2.563</td> <td>205,054</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - 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   | <b>Wire Bond</b>       |           |   |   | <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> | <b>% of Total Weight</b> |                            |  | <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> | <b>0.31</b>    |                |   | Doped Gold       | 7440-57-5  | 100.00         | <b>Total</b>   |  |  | <b>100.00</b>  | Copper                  | 7440-50-8  | Lead Frame     | 20.505                  | 2.563      | 205,054    | <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td>
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Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - 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  | <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> | <b>100.000</b> |            |  | Silicon        | 7440-21-3 | Lead Frame | 0.097   | 0.012     | 969        | Magnesium   | 7439-95-4                  | Lead Frame | 0.022     | 0.003                      | 215            | Silver        | 7440-22-4        | Lead Frame     | 0.359         | 0.045            | 3,593      | Silver | 7440-22-4 | Die Attach | 0.800  | 0.100     | 8,000      | Epoxy Resin | Trade secret | Die Attach | 0.200       | 0.025        | 2,000      | Gallium arsenide (GaAs) | 1303-00-0 | Chip (Die) | 1.090                   | 0.136     | 10,900     | Doped Gold | 7440-57-5 | Wire Bond | 0.310      | 0.039     | 3,100     | Tin   | 7440-31-5 | Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour | 0.890 | 0.111     | 8,900   | <b>0.0125 g Total Mass</b> |       |       | <b>TOTALS:</b>             | <b>100.000</b> | <b>12.500</b> | <b>1,000,000</b> |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Lead Frame</b>  |              |   |   | <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>21.53</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>95.24</td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>2.54</td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>0.45</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>0.10</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>1.67</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> | <b>% of Total Weight</b>   |  |   
  | <table border="1"> <tr> <td colspan="3"><b>21.53</b></td> </tr> </table> | <b>21.53</b> |   |  | Copper       | 7440-50-8      |  | 95.24                    | Nickel       | 7440-02-0    |  | 2.54          | Silicon      | 7440-21-3 | 0.45          | Magnesium   | 7439-95-4 | 0.10          | Silver       | 7440-22-4 | 1.67          | <b>Total</b>   |                        |               | <b>100.00</b>  
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| <b>% of Total Weight</b>   |              |   |   |  | <table border="1"> <tr> <td colspan="3"><b>21.53</b></td> </tr> </table> |  |   
  |  | <b>21.53</b> |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Copper   | 7440-50-8    | 95.24   |   |  |  |  |   
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Nickel   | 7440-02-0    | 2.54  |   |  |  |  |   
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| Silicon  | 7440-21-3    | 0.45  |   |  |  |  |   
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Magnesium  | 7439-95-4    | 0.10  |   |  |  |  |   
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Silver   | 7440-22-4    | 1.67  |   |  |  |  |   
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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   |                        |           |   |   |  |                          |                            |  |   |                |                |   |                  |  |                |                |  |  |                |                         |  |                |                         |            |            |   
  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Phenolic Resin   | Trade Secret | Mold Compound   | 3.646   | 0.456  | 36,462   | <table border="1"> <tr> <td colspan="3"><b>0.13 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Die Attach</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table> </td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>Mold Compound</td> <td>0.226</td> <td>0.028</td> <td>2,255</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.04 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Wire Bond</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>20.505</td> <td>2.563</td> <td>205,054</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table>  | <b>0.13 (mg) Total</b>  
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   | <b>0.89</b>            |           |   | Tin   | 7440-31-5  | 100.00                   | <b>Total</b>               |  |   | <b>100.00</b>  | Nickel         | 7440-02-0   | Lead Frame       | 0.547  | 0.068          | 5,469          | <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table> | <b>12.500</b>  |                |                         | <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> | <b>100.000</b> |                         |            | Silicon    | 7440-21-3   
  | Lead Frame             | 0.097     | 0.012  | 969   | Magnesium  | 7439-95-4 | Lead Frame  | 0.022   | 0.003                    | 215        | Silver  | 7440-22-4   | Lead Frame  | 0.359  | 0.045   | 3,593          | Silver        | 7440-22-4        | Die Attach     | 0.800         | 0.100            | 8,000         | Epoxy Resin | Trade secret | Die Attach    | 0.200                   | 0.025     | 2,000      | Gallium arsenide (GaAs)  | 1303-00-0     | Chip (Die) | 1.090  
   | 0.136  | 10,900         | Doped Gold | 7440-57-5  | Wire Bond      | 0.310     | 0.039      | 3,100   | Tin       | 7440-31-5  | Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour | 0.890                      | 0.111      | 8,900     | <b>0.0125 g Total Mass</b> |                |               | <b>TOTALS:</b>   | <b>100.000</b> | <b>12.500</b> | <b>1,000,000</b> |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>0.13 (mg) Total</b>   |              |   | <table border="1"> <tr> <td colspan="3"><b>Die Attach</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table> </td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>Mold Compound</td> <td>0.226</td> <td>0.028</td> <td>2,255</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.04 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Wire Bond</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>20.505</td> <td>2.563</td> <td>205,054</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table></td></tr></table></td></tr></table></td></tr></table></td></tr></table></td></tr></table>  | <b>Die Attach</b>  |  |  | <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table> </td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td colspan="3" style="text-align:
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  | Tin                    | 7440-31-5 | 100.00  | <b>Total</b>  |  |                          | <b>100.00</b>              | Nickel   | 7440-02-0   | Lead Frame     | 0.547          | 0.068   | 5,469            | <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table> | <b>12.500</b>  |                |  | <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> | <b>100.000</b> |                         |  | Silicon        | 7440-21-3               | Lead Frame | 0.097      | 0.012  
   | 969                    | Magnesium | 7439-95-4  | Lead Frame  | 0.022  | 0.003     | 215   | Silver  | 7440-22-4                | Lead Frame | 0.359   | 0.045   | 3,593       | Silver | 7440-22-4   | Die Attach     | 0.800         | 0.100            | 8,000          | Epoxy Resin   | Trade secret     | Die Attach    | 0.200       | 0.025        | 2,000         | Gallium arsenide (GaAs) | 1303-00-0 | Chip (Die) | 1.090  | 0.136         | 10,900     | Doped Gold  
  | 7440-57-5  | Wire Bond      | 0.310      | 0.039  | 3,100          | Tin       | 7440-31-5  | Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour | 0.890     | 0.111      | 8,900   | <b>0.0125 g Total Mass</b> |            |           | <b>TOTALS:</b>             | <b>100.000</b> | <b>12.500</b> | <b>1,000,000</b> |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Die Attach</b>  |              |   |   | <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table> </td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>80.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>20.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>   | <b>% of Total Weight</b>   |  |   
  | <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table>  | <b>1.00</b>  |   |  | Silver       | 7440-22-4      |  | 80.00                    | Epoxy Resin  | Trade secret |  | 20.00         | <b>Total</b> |           |               | <b>100.00</b>   |           |               |              |           |               |  |                        |               |  
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| <b>% of Total Weight</b>   |              |   |   |  | <table border="1"> <tr> <td colspan="3"><b>1.00</b></td> </tr> </table>  |  |   
  |  | <b>1.00</b>  |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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| Silver   | 7440-22-4    | 80.00   |   |  |  |  |   
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Epoxy Resin  | Trade secret | 20.00   |   |  |  |  |   
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Carbon Black   | 1333-86-4    | Mold Compound   | 0.226   | 0.028  | 2,255  | <table border="1"> <tr> <td colspan="3"><b>0.04 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Wire Bond</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Copper</td> <td>7440-50-8</td> <td>Lead Frame</td> <td>20.505</td> <td>2.563</td> <td>205,054</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table></td></tr></table></td></tr></table></td></tr></table></td></tr></table>   | <b>0.04 (mg) Total</b>  
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  | 7440-31-5         | 100.00  | <b>Total</b>  |  |                          | <b>100.00</b> | Nickel  | 7440-02-0  | Lead Frame    | 0.547         | 0.068  | 5,469  | <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table> | <b>12.500</b>  |   |   
  | <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table>         | <b>100.000</b> |   |   | Silicon   | 7440-21-3                | Lead Frame   | 0.097   | 0.012   | 969           | Magnesium   | 7439-95-4  
   | Lead Frame             | 0.022     | 0.003   | 215   | Silver   | 7440-22-4                | Lead Frame                 | 0.359  | 0.045   | 3,593          | Silver         | 7440-22-4   | Die Attach       | 0.800  | 0.100          | 8,000          | Epoxy Resin  | Trade secret   | Die Attach     | 0.200                   | 0.025  | 2,000          | Gallium arsenide (GaAs) | 1303-00-0  | Chip (Die) | 1.090   
  | 0.136                  | 10,900    | Doped Gold   | 7440-57-5   | Wire Bond  | 0.310     | 0.039   | 3,100   | Tin                      | 7440-31-5  | Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour   | 0.890   | 0.111       | 8,900  | <b>0.0125 g Total Mass</b>  |                |               | <b>TOTALS:</b>   | <b>100.000</b> | <b>12.500</b> | <b>1,000,000</b> |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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  | <b>% of Total Weight</b>   |              |   | <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table>            | <b>0.31</b>  |                |  | Doped Gold               | 7440-57-5    | 100.00       |  | <b>Total</b>  |              |           | <b>100.00</b> | Copper  | 7440-50-8 | Lead Frame    | 20.505       | 2.563     | 205,054       | <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table></td></tr></table></td></tr></table> | <b>0.11 (mg) Total</b> |               |  
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  |   |  | <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table>   | <b>0.89</b>   |   |   | Tin   
  | 7440-31-5  |   | 100.00                 | <b>Total</b>   |   |   
  | <b>100.00</b>     | Nickel  | 7440-02-0   | Lead Frame   | 0.547                    | 0.068         | 5,469   | <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table> | <b>12.500</b> |               |  | <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> |  | <b>100.000</b> |   |   
  |  | Silicon        | 7440-21-3   | Lead Frame  | 0.097   | 0.012                    | 969  | Magnesium   | 7439-95-4   | Lead Frame    | 0.022   | 0.003  
   | 215                    | Silver    | 7440-22-4   | Lead Frame  | 0.359  | 0.045                    | 3,593                      | Silver   | 7440-22-4   | Die Attach     | 0.800          | 0.100   | 8,000            | Epoxy Resin  | Trade secret   | Die Attach     | 0.200  | 0.025  | 2,000          | Gallium arsenide (GaAs) | 1303-00-0  | Chip (Die)     | 1.090                   | 0.136      | 10,900     | Doped Gold  
  | 7440-57-5              | Wire Bond | 0.310  | 0.039   | 3,100  | Tin       | 7440-31-5   | Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour   | 0.890                    | 0.111      | 8,900   | <b>0.0125 g Total Mass</b>  |             |        | <b>TOTALS:</b>  | <b>100.000</b> | <b>12.500</b> | <b>1,000,000</b> |                |               |                  |               |             |              |               |                         |           |            |  |               |            | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Wire Bond</b>   |              |   |   | <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table> </td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table>   | <b>% of Total Weight</b>   |  |   
  | <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table>  | <b>0.31</b>  |   |  | Doped Gold   | 7440-57-5      |  | 100.00                   | <b>Total</b> |              |  | <b>100.00</b> |              |           |               |   |           |               |              |           |               |  |                        |               |  
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| <b>% of Total Weight</b>   |              |   |   |  | <table border="1"> <tr> <td colspan="3"><b>0.31</b></td> </tr> </table>  |  |   
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Doped Gold   | 7440-57-5    | 100.00  |   |  |  |  |   
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Copper   | 7440-50-8    | Lead Frame  | 20.505  | 2.563  | 205,054  | <table border="1"> <tr> <td colspan="3"><b>0.11 (mg) Total</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>% of Total Weight</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>0.89</b></td> </tr> </table> </td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>100.00</td> </tr> <tr> <td colspan="3" style="text-align: right;"><b>Total</b></td> <td><b>100.00</b></td> </tr> </table> </td> </tr> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>Lead Frame</td> <td>0.547</td> <td>0.068</td> <td>5,469</td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table></td></tr></table></td></tr></table>   | <b>0.11 (mg) Total</b>  
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   | 0.068   | 5,469  | <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table>   | <b>12.500</b>   |   |   
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  | 0.097  | 0.012   | 969                    | Magnesium  | 7439-95-4   | Lead Frame  
  | 0.022             | 0.003   | 215   | Silver   | 7440-22-4                | Lead Frame    | 0.359   | 0.045  | 3,593         | Silver        | 7440-22-4  | Die Attach   | 0.800  | 0.100          | 8,000   | Epoxy Resin   
  | Trade secret   | Die Attach     | 0.200   | 0.025   | 2,000   | Gallium arsenide (GaAs)  | 1303-00-0  | Chip (Die)  | 1.090   | 0.136         | 10,900  | Doped Gold   
   | 7440-57-5              | Wire Bond | 0.310   | 0.039   | 3,100  | Tin                      | 7440-31-5                  | Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour  | 0.890   | 0.111          | 8,900          | <b>0.0125 g Total Mass</b>  |                  |  | <b>TOTALS:</b> | <b>100.000</b> | <b>12.500</b>  | <b>1,000,000</b>   |                |                         |  |                |                         |            |            | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Tin  | 7440-31-5    | 100.00  |   |  |  |  |   
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| <b>Total</b>   |              |   | <b>100.00</b>   |  |  |  |   
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| Nickel   | 7440-02-0    | Lead Frame  | 0.547   | 0.068  | 5,469  | <table border="1"> <tr> <td colspan="3"><b>12.500</b></td> <td rowspan="4"> <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table> </td> </tr> <tr> <td>Silicon</td> <td>7440-21-3</td> <td>Lead Frame</td> <td>0.097</td> <td>0.012</td> <td>969</td> </tr> <tr> <td>Magnesium</td> <td>7439-95-4</td> <td>Lead Frame</td> <td>0.022</td> <td>0.003</td> <td>215</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Lead Frame</td> <td>0.359</td> <td>0.045</td> <td>3,593</td> </tr> <tr> <td>Silver</td> <td>7440-22-4</td> <td>Die Attach</td> <td>0.800</td> <td>0.100</td> <td>8,000</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade secret</td> <td>Die Attach</td> <td>0.200</td> <td>0.025</td> <td>2,000</td> </tr> <tr> <td>Gallium arsenide (GaAs)</td> <td>1303-00-0</td> <td>Chip (Die)</td> <td>1.090</td> <td>0.136</td> <td>10,900</td> </tr> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>Wire Bond</td> <td>0.310</td> <td>0.039</td> <td>3,100</td> </tr> <tr> <td>Tin</td> <td>7440-31-5</td> <td>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</td> <td>0.890</td> <td>0.111</td> <td>8,900</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>0.0125 g Total Mass</b></td> <td><b>TOTALS:</b></td> <td><b>100.000</b></td> <td><b>12.500</b></td> <td><b>1,000,000</b></td> <td colspan="3"></td> </tr> </table>   | <b>12.500</b>   
  |  |              | <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table>  | <b>100.000</b>   |              |                | Silicon  | 7440-21-3                | Lead Frame   | 0.097        | 0.012  | 969           | Magnesium    | 7439-95-4 | Lead Frame    | 0.022   | 0.003     | 215           | Silver       | 7440-22-4 | Lead Frame    | 0.359  | 0.045                  | 3,593         | Silver   
   | 7440-22-4   | Die Attach   | 0.800  | 0.100   | 8,000   | Epoxy Resin   
  | Trade secret  | Die Attach   | 0.200   | 0.025   | 2,000   | Gallium arsenide (GaAs)   | 1303-00-0   
  | Chip (Die)   | 1.090   | 0.136                  | 10,900   | Doped Gold  | 7440-57-5   
  | Wire Bond         | 0.310   | 0.039   | 3,100  | Tin                      | 7440-31-5     | Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour | 0.890  | 0.111         | 8,900         | <b>0.0125 g Total Mass</b>   |  |  | <b>TOTALS:</b> | <b>100.000</b>  | <b>12.500</b>   
  | <b>1,000,000</b>   |                |   |   |   |                          |  |   |   |               |   | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <b>12.500</b>  |              |   | <table border="1"> <tr> <td colspan="3"><b>100.000</b></td> </tr> </table>  | <b>100.000</b>   |  |  |   
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| Silicon  | 7440-21-3    | Lead Frame  |   | 0.097  | 0.012  |  | 969   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Magnesium  | 7439-95-4    | Lead Frame  |   | 0.022  | 0.003  | 215  |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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| Silver   | 7440-22-4    | Lead Frame  | 0.359   | 0.045  | 3,593  |  |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Silver   | 7440-22-4    | Die Attach  | 0.800   | 0.100  | 8,000  |  |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Epoxy Resin  | Trade secret | Die Attach  | 0.200   | 0.025  | 2,000  |  |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Gallium arsenide (GaAs)  | 1303-00-0    | Chip (Die)  | 1.090   | 0.136  | 10,900   |  |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
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| Doped Gold   | 7440-57-5    | Wire Bond   | 0.310   | 0.039  | 3,100  |  |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tin  | 7440-31-5    | Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour | 0.890   | 0.111  | 8,900  |  |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>0.0125 g Total Mass</b>   |              |   | <b>TOTALS:</b>  | <b>100.000</b>   | <b>12.500</b>  | <b>1,000,000</b>   |   
  |  |              |   |  |              |                |  |                          |              |              |  |               |              |           |               |   |           |               |              |           |               |  |                        |               |  
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   |                        |           |   |   |  |                          |                            |  |   |                |                |   |                  |  |                |                |  |  |                |                         |  |                |                         |            |            |   
  |                        |           |  |   |  |           |   |   |                          |            |   |   |             |        |   |                |               |                  |                |               |                  |               |             |              |               |                         |           |            |  |               |            |  
   |  |                |            |  |                |           |            |   |           |            |   |                            |            |           |                            |                |               |                  |                |               |                  |            |        |           |            |        |           |            |             |              |            |             |              |            |                         |           |            |                         |           |            |            |           |           |            |           |           |       |           |   |       |           |   |                            |       |       |                            |                |               |                  |                |               |                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.

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Semiconductor Device Type: QX6E 06 (Lead) XSON 1.5x1.5x0.45mm (QX)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	4.18	(mg) Total	Mold Compound	% of Total Weight	68.55
Silica, fused	60676-86-0	Mold Compound	61.695	3.763	616,950			Silica, fused	60676-86-0	90.00
Epoxy Resin	Trade Secret	Mold Compound	3.325	0.203	33,247			Epoxy Resin	Trade Secret	4.85
Phenolic Resin	Trade Secret	Mold Compound	3.325	0.203	33,247			Phenolic Resin	Trade Secret	4.85
Carbon Black	1333-86-4	Mold Compound	0.206	0.013	2,057			Carbon Black	1333-86-4	0.30
Copper	7440-50-8	Lead Frame	23.696	1.445	236,960			<b>Total 100.00</b>		
Nickel	7440-02-0	Lead Frame	0.632	0.039	6,320	1.52	(mg) Total	Lead Frame	% of Total Weight	24.88
Silicon	7440-21-3	Lead Frame	0.112	0.007	1,120			Copper	7440-50-8	95.24
Magnesium	7439-95-4	Lead Frame	0.025	0.002	249			Nickel	7440-02-0	2.54
Silver	7440-22-4	Lead Frame	0.415	0.025	4,152			Silicon	7440-21-3	0.45
Ag	7440-22-4	Die Attach	0.990	0.060	9,900			Magnesium	7439-95-4	0.10
Epoxy resin	Trade secret	Die Attach	0.198	0.012	1,980			Silver	7440-22-4	1.67
Aliphatic anhydride	Trade secret	Die Attach	0.066	0.004	660			<b>Total 100.00</b>		
2-Butoxyethyl acetate	112-07-2	Die Attach	0.033	0.002	330	0.08	(mg) Total	Die Attach	% of Total Weight	1.32
Polymeric material	Trade secret	Die Attach	0.033	0.002	330			Ag	7440-22-4	75.00
Silicon	1303-00-0	Chip (Die)	3.630	0.221	36,300			Epoxy resin	Trade secret	15.00
Au	7440-57-5	Wire Bond	0.590	0.036	5,899			Aliphatic anhydride	Trade secret	5.00
impurity	Misc.	Wire Bond	0.000	0.000	1			2-Butoxyethyl acetate	112-07-2	2.50
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.030	0.063	10,300			Polymeric material	Trade secret	3
<b>0.0061 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>6.100</b>	<b>1,000,000</b>		<b>Total 100.00</b>		

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: QX6E 06 (Lead) XSON 1.5x1.5x0.45mm (QX)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	4.18	(mg) Total	Mold Compound	% of Total Weight	68.55	
Silica, fused	60676-86-0	Mold Compound	61.695	3.763	616,950			Silica, fused	60676-86-0	90.00	
Epoxy Resin	Trade Secret	Mold Compound	3.325	0.203	33,247			Epoxy Resin	Trade Secret	4.85	
Phenolic Resin	Trade Secret	Mold Compound	3.325	0.203	33,247			Phenolic Resin	Trade Secret	4.85	
Carbon Black	1333-86-4	Mold Compound	0.206	0.013	2,057			Carbon Black	1333-86-4	0.30	
Copper	7440-50-8	Lead Frame	23.696	1.445	236,960			<b>Total 100.00</b>			
Nickel	7440-02-0	Lead Frame	0.632	0.039	6,320	1.52	(mg) Total	Lead Frame	% of Total Weight	24.88	
Silicon	7440-21-3	Lead Frame	0.112	0.007	1,120			Copper	7440-50-8	95.24	
Magnesium	7439-95-4	Lead Frame	0.025	0.002	249			Nickel	7440-02-0	2.54	
Silver	7440-22-4	Lead Frame	0.415	0.025	4,152			Silicon	7440-21-3	0.45	
Ag	7440-22-4	Die Attach	0.990	0.060	9,900			Magnesium	7439-95-4	0.10	
Epoxy resin	Trade secret	Die Attach	0.198	0.012	1,980			Silver	7440-22-4	1.67	
Aliphatic anhydride	Trade secret	Die Attach	0.066	0.004	660			<b>Total 100.00</b>			
2-Butoxyethyl acetate	112-07-2	Die Attach	0.033	0.002	330	0.08	(mg) Total	Die Attach	% of Total Weight	1.32	
Polymeric material	Trade secret	Die Attach	0.033	0.002	330			Ag	7440-22-4	75.00	
Silicon	1303-00-0	Chip (Die)	3.630	0.221	36,300			Epoxy resin	Trade secret	15.00	
Au	7440-57-5	Wire Bond	0.590	0.036	5,899			Aliphatic anhydride	Trade secret	5.00	
impurity	Misc.	Wire Bond	0.000	0.000	1			2-Butoxyethyl acetate	112-07-2	2.50	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.030	0.063	10,300			Polymeric material	Trade secret	3	
<b>0.0061 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>6.100</b>	<b>1,000,000</b>		<b>Total 100.00</b>			
						0.22	(mg) Total	Chip (Die)	% of Total Weight	3.63	
								GaAs	1303-00-0	100	
						<b>Total 100.00</b>					
						0.04	(mg) Total	Wire Bond	% of Total Weight	0.59	
								Au	7440-57-5	99.99	
								impurity	Misc.	0.01	
						<b>Total 100.00</b>					
						0.06	(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.03	
								Tin	7440-31-5	100.00	
						<b>Total 100.00</b>					
						6.100				100.000	



Semiconductor Device Type: QX8E 08 (Lead) XSON 2x2x0.45mm (Q7)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																			
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	8.14 (mg) Total	Mold Compound	% of Total Weight	79.8																				
Silica, fused	60676-86-0	Mold Compound	71.820	7.326	718.200	<table border="1"> <tr><td>Silica, fused</td><td>60676-86-0</td><td>90.00</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>4.85</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>4.85</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.30</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Silica, fused	60676-86-0	90.00	Epoxy Resin	Trade Secret	4.85	Phenolic Resin	Trade Secret	4.85	Carbon Black	1333-86-4	0.30	Total			100.00							
Silica, fused	60676-86-0	90.00																											
Epoxy Resin	Trade Secret	4.85																											
Phenolic Resin	Trade Secret	4.85																											
Carbon Black	1333-86-4	0.30																											
Total			100.00																										
Epoxy Resin	Trade Secret	Mold Compound	3.870	0.395	38.703																								
Phenolic Resin	Trade Secret	Mold Compound	3.870	0.395	38.703																								
Carbon Black	1333-86-4	Mold Compound	0.239	0.024	2.394																								
Copper	7440-50-8	Lead Frame	10.000	1.020	100.003	<table border="1"> <tr><td colspan="3">Total</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Total			100.00	Total			100.00	Total			100.00	Total			100.00	Total			100.00			
Total			100.00																										
Total			100.00																										
Total			100.00																										
Total			100.00																										
Total			100.00																										
Nickel	7440-02-0	Lead Frame	0.267	0.027	2.667																								
Silicon	7440-21-3	Lead Frame	0.047	0.005	473																								
Magnesium	7439-95-4	Lead Frame	0.011	0.001	105																								
Silver	7440-22-4	Lead Frame	0.175	0.018	1,752																								
Ag	7440-22-4	Die Attach	0.563	0.057	5,625	<table border="1"> <tr><td>Copper</td><td>7440-50-8</td><td>95.24</td></tr> <tr><td>Nickel</td><td>7440-02-0</td><td>2.54</td></tr> <tr><td>Silicon</td><td>7440-21-3</td><td>0.45</td></tr> <tr><td>Magnesium</td><td>7439-95-4</td><td>0.10</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.67</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Copper	7440-50-8	95.24	Nickel	7440-02-0	2.54	Silicon	7440-21-3	0.45	Magnesium	7439-95-4	0.10	Silver	7440-22-4	1.67	Total			100.00				
Copper	7440-50-8	95.24																											
Nickel	7440-02-0	2.54																											
Silicon	7440-21-3	0.45																											
Magnesium	7439-95-4	0.10																											
Silver	7440-22-4	1.67																											
Total			100.00																										
Epoxy resin	Trade secret	Die Attach	0.113	0.011	1,125																								
Aliphatic anhydride	Trade secret	Die Attach	0.038	0.004	375																								
2-Butoxyethyl acetate	112-07-2	Die Attach	0.019	0.002	188																								
Polymeric material	Trade secret	Die Attach	0.019	0.002	188																								
GaAs	1303-00-0	Chip (Die)	7.500	0.765	75,000	<table border="1"> <tr><td>Ag</td><td>7440-22-4</td><td>75.00</td></tr> <tr><td>Epoxy resin</td><td>Trade secret</td><td>15.00</td></tr> <tr><td>Aliphatic anhydride</td><td>Trade secret</td><td>5.00</td></tr> <tr><td>2-Butoxyethyl acetate</td><td>112-07-2</td><td>2.50</td></tr> <tr><td>Polymeric material</td><td>Trade secret</td><td>3</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Ag	7440-22-4	75.00	Epoxy resin	Trade secret	15.00	Aliphatic anhydride	Trade secret	5.00	2-Butoxyethyl acetate	112-07-2	2.50	Polymeric material	Trade secret	3	Total			100.00				
Ag	7440-22-4	75.00																											
Epoxy resin	Trade secret	15.00																											
Aliphatic anhydride	Trade secret	5.00																											
2-Butoxyethyl acetate	112-07-2	2.50																											
Polymeric material	Trade secret	3																											
Total			100.00																										
Gold	7440-57-5	Wire Bond	0.200	0.020	2,000																								
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.128	12,500																								
<b>TOTALS:</b>			<b>100.000</b>	<b>10.200</b>	<b>1,000,000</b>																								
<b>0.0102 g Total Mass</b>																													
						<b>0.77 (mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.5</b>																				
						<table border="1"> <tr><td>GaAs</td><td>1303-00-0</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	GaAs	1303-00-0	100	Total			100.00																
GaAs	1303-00-0	100																											
Total			100.00																										
						<b>0.02 (mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.2</b>																				
						<table border="1"> <tr><td>Gold</td><td>7440-57-5</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Gold	7440-57-5	100.00	Total			100.00																
Gold	7440-57-5	100.00																											
Total			100.00																										
						<b>0.13 (mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.25</b>																				
						<table border="1"> <tr><td>Tin</td><td>7440-31-5</td><td>100.00</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Tin	7440-31-5	100.00	Total			100.00																
Tin	7440-31-5	100.00																											
Total			100.00																										
						<b>10.200</b>	<b>100.00</b>		<b>100.000</b>																				

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Semiconductor Device Type: <b>XX8E 08</b> (Lead) <b>X2SON</b> 2x2x0.35mm (X8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	2.86 (mg) Total			51.99	
Silica, fused	60676-86-0	Mold Compound	46.791	2.574	467.910	Silica, fused 60676-86-0 90.00			Total 100.00	
Epoxy Resin	Trade Secret	Mold Compound	2.522	0.139	25.215	Epoxy Resin Trade Secret 4.85				
Phenolic Resin	Trade Secret	Mold Compound	2.522	0.139	25.215	Phenolic Resin Trade Secret 4.85				
Carbon Black	1333-86-4	Mold Compound	0.156	0.009	1,560	Carbon Black 1333-86-4 0.30				
Copper	7440-50-8	Lead Frame	38.649	2.126	386.488	Total 100.00				
Nickel	7440-02-0	Lead Frame	1.031	0.057	10,307	2.23 (mg) Total			40.58	
Silicon	7440-21-3	Lead Frame	0.183	0.010	1,826	Copper 7440-50-8 95.24			Total 100.00	
Magnesium	7439-95-4	Lead Frame	0.041	0.002	406	Nickel 7440-02-0 2.54				
Silver	7440-22-4	Lead Frame	0.677	0.037	6,773	Silicon 7440-21-3 0.45				
Silver	7440-22-4	Die Attach	1.888	0.104	18,880	Magnesium 7439-95-4 0.10				
Epoxy Resin	Trade secret	Die Attach	0.472	0.026	4,720	Silver 7440-22-4 1.67				
Gallium arsenide (GaAs)	1303-00-0	Chip (Die)	2.360	0.130	23,600	Total 100.00			2.36	
Doped Gold	7440-57-5	Wire Bond	0.720	0.040	7,200	0.13 (mg) Total				
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.990	0.109	19,900	Silver 7440-22-4 80.00			Total 100.00	
<b>TOTALS:</b>			<b>100.000</b>	<b>5.500</b>	<b>1,000,000</b>	Epoxy Resin Trade secret 20.00				
<b>0.0055 g Total Mass</b>										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						0.13 (mg) Total			2.36	
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.						Chip (Die)			Total 100.00	
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>						0.04 (mg) Total			0.72	
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.						Doped Gold 7440-57-5 100.00			Total 100.00	
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Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour			Total 100.00	
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.						Tin 7440-31-5 100.00				
						5.500			100.000	





Semiconductor Device Type: TL 36 (Lead) VTLA 5x5x0.9mm (7S)		
Basic Substance	CAS Number	"Contained In" Sub-Component
Silica, vitreous (or fused)	60676-86-0	Mold Compound
Epoxy Resin	Trade Secret	Mold Compound
Phenolic Resin	Trade Secret	Mold Compound
Carbon Black	1333-86-4	Mold Compound
Copper	7440-50-8	Lead Frame
Iron	7439-89-6	Lead Frame
Phosphorous	7723-14-0	Lead Frame
Zinc (Metal)	7440-44-0	Lead Frame
Silver (Ag)	7440-22-4	Die Attach
Proprietary Resin	Trade Secret	Die Attach
Proprietary Curing agent & Hardener	Trade Secret	Die Attach
Silicon	7440-21-3	Chip (Die)
Gold	7440-57-5	Wire Bond
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour
Palladium	7440-05-03	Plating on external leads (pins) / annealed at 150°C for 1 hour
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour
<b>0.1475 g Total Mass</b>		

Termination Base Alloy: Copper Alloy (Cu)		
% Total Weight	mg/part	ppm
67.830	100.049	678.300
6.943	10.240	69.426
4.788	7.062	47.880
0.239	0.353	2.394
10.217	15.069	102.165
0.242	0.356	2.415
0.026	0.039	263
0.016	0.023	158
0.589	0.868	5.888
0.139	0.205	1.388
0.023	0.033	225
7.500	11.063	75.000
0.200	0.295	2.000
1.125	1.659	11.250
0.063	0.092	625
0.063	0.092	625
<b>TOTALS: 100.000 147.500 1,000,000</b>		

Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4															
(mg) Total	Mold Compound	% of Total Weight																
117.71			79.8															
<table border="1"> <tr> <td>Silica, vitreous (or fused)</td> <td>60676-86-0</td> <td>85.00</td> </tr> <tr> <td>Epoxy Resin</td> <td>Trade Secret</td> <td>8.70</td> </tr> <tr> <td>Phenolic Resin</td> <td>Trade Secret</td> <td>6.00</td> </tr> <tr> <td>Carbon Black</td> <td>1333-86-4</td> <td>0.30</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Total 100.00</b></td> </tr> </table>			Silica, vitreous (or fused)	60676-86-0	85.00	Epoxy Resin	Trade Secret	8.70	Phenolic Resin	Trade Secret	6.00	Carbon Black	1333-86-4	0.30	<b>Total 100.00</b>			
Silica, vitreous (or fused)	60676-86-0	85.00																
Epoxy Resin	Trade Secret	8.70																
Phenolic Resin	Trade Secret	6.00																
Carbon Black	1333-86-4	0.30																
<b>Total 100.00</b>																		
15.49			10.5															
<table border="1"> <tr> <td>Copper</td> <td>7440-50-8</td> <td>97.30</td> </tr> <tr> <td>Iron</td> <td>7439-89-6</td> <td>2.30</td> </tr> <tr> <td>Phosphorous</td> <td>7723-14-0</td> <td>0.25</td> </tr> <tr> <td>Zinc (Metal)</td> <td>7440-44-0</td> <td>0.15</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Total 100.00</b></td> </tr> </table>			Copper	7440-50-8	97.30	Iron	7439-89-6	2.30	Phosphorous	7723-14-0	0.25	Zinc (Metal)	7440-44-0	0.15	<b>Total 100.00</b>			
Copper	7440-50-8	97.30																
Iron	7439-89-6	2.30																
Phosphorous	7723-14-0	0.25																
Zinc (Metal)	7440-44-0	0.15																
<b>Total 100.00</b>																		
1.11			0.75															
<table border="1"> <tr> <td>Silver (Ag)</td> <td>7440-22-4</td> <td>79</td> </tr> <tr> <td>Proprietary Resin</td> <td>Trade Secret</td> <td>19</td> </tr> <tr> <td>Proprietary Curing agent &amp; Hardener</td> <td>Trade Secret</td> <td>3</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Total 100.00</b></td> </tr> </table>			Silver (Ag)	7440-22-4	79	Proprietary Resin	Trade Secret	19	Proprietary Curing agent & Hardener	Trade Secret	3	<b>Total 100.00</b>						
Silver (Ag)	7440-22-4	79																
Proprietary Resin	Trade Secret	19																
Proprietary Curing agent & Hardener	Trade Secret	3																
<b>Total 100.00</b>																		
11.06			7.5															
<table border="1"> <tr> <td>Doped Silicon</td> <td>7440-21-3</td> <td>100</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Total 100.00</b></td> </tr> </table>			Doped Silicon	7440-21-3	100	<b>Total 100.00</b>												
Doped Silicon	7440-21-3	100																
<b>Total 100.00</b>																		
0.30			0.2															
<table border="1"> <tr> <td>Doped Gold</td> <td>7440-57-5</td> <td>100</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Total 100.00</b></td> </tr> </table>			Doped Gold	7440-57-5	100	<b>Total 100.00</b>												
Doped Gold	7440-57-5	100																
<b>Total 100.00</b>																		
1.84			1.25															
<table border="1"> <tr> <td>Nickel</td> <td>7440-02-0</td> <td>90.00</td> </tr> <tr> <td>Palladium</td> <td>7440-05-03</td> <td>5.00</td> </tr> <tr> <td>Gold</td> <td>7440-57-5</td> <td>5.00</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Total 100.00</b></td> </tr> </table>			Nickel	7440-02-0	90.00	Palladium	7440-05-03	5.00	Gold	7440-57-5	5.00	<b>Total 100.00</b>						
Nickel	7440-02-0	90.00																
Palladium	7440-05-03	5.00																
Gold	7440-57-5	5.00																
<b>Total 100.00</b>																		
<b>147.500</b>			<b>100.000</b>															

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data.

If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.

Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

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Semiconductor Device Type: TL 44 (Lead) VTLA 6x6x0.9mm (6S)

Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	120.398	678.300
Epoxy Resin	Trade Secret	Mold Compound	6.943	12.323	69.426
Phenolic Resin	Trade Secret	Mold Compound	4.788	8.499	47.880
Carbon Black	1333-86-4	Mold Compound	0.239	0.425	2.394
Copper	7440-50-8	Lead Frame	10.217	18.134	102.165
Iron	7439-89-6	Lead Frame	0.242	0.429	2.415
Phosphorous	7723-14-0	Lead Frame	0.026	0.047	263
Zinc (Metal)	7440-44-0	Lead Frame	0.016	0.028	158
Silver (Ag)	7440-22-4	Die Attach	0.589	1.045	5.888
Proprietary Resin	Trade Secret	Die Attach	0.139	0.246	1.388
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.040	225
Silicon	7440-21-3	Chip (Die)	7.500	13.313	75.000
Gold	7440-57-5	Wire Bond	0.200	0.355	2.000
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.997	11.250
Palladium	7440-05-03	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625
<b>TOTALS:</b>			<b>100.000</b>	<b>177.500</b>	<b>1,000,000</b>

0.1775 g Total Mass

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Termination Base Alloy: Copper Alloy (Cu)	Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4
141.65	(mg) Total	Mold Compound	% of Total Weight	79.8
	Silica, vitreous (or fused)	60676-86-0	85.00	
	Epoxy Resin	Trade Secret	8.70	
	Phenolic Resin	Trade Secret	6.00	
	Carbon Black	1333-86-4	0.30	
<b>Total</b>			<b>100.00</b>	
18.64	(mg) Total	Lead Frame	% of Total Weight	10.5
	Copper	7440-50-8	97.30	
	Iron	7439-89-6	2.30	
	Phosphorous	7723-14-0	0.25	
	Zinc (Metal)	7440-44-0	0.15	
<b>Total</b>			<b>100.00</b>	
1.33	(mg) Total	Die Attach	% of Total Weight	0.75
	Silver (Ag)	7440-22-4	79	
	Proprietary Resin	Trade Secret	19	
	Proprietary Curing agent & Hardener	Trade Secret	3	
<b>Total</b>			<b>100.00</b>	
13.31	Total (mg)	Chip (Die)	% of Total Weight	7.5
	Doped Silicon	7440-21-3	100	
<b>Total</b>			<b>100.00</b>	
0.36	(mg) Total	Wire Bond	% of Total Weight	0.2
	Doped Gold	7440-57-5	100	
<b>Total</b>			<b>100.00</b>	
2.22	(mg) Total	Plating on external leads (pins) / annealed at 150°C for 1 hour	% of Total Weight	1.25
	Nickel	7440-02-0	90.00	
	Palladium	7440-05-03	5.00	
	Gold	7440-57-5	5.00	
<b>Total</b>			<b>100.00</b>	
177.500				100.000



Semiconductor Device Type: TL 124 (Lead) VTLA 9x9x0.9mm (8S)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e4	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous (or fused)	60676-86-0	Mold Compound	67.830	120.398	678,300	141.65			79.8	
Epoxy Resin	Trade Secret	Mold Compound	6.943	12.323	69,426		Silica, vitreous (or fused)	60676-86-0	85.00	
Phenolic Resin	Trade Secret	Mold Compound	4.788	8.499	47,880		Epoxy Resin	Trade Secret	8.70	
Carbon Black	1333-86-4	Mold Compound	0.239	0.425	2,394		Phenolic Resin	Trade Secret	6.00	
Copper	7440-50-8	Lead Frame	10.217	18.134	102,165		Carbon Black	1333-86-4	0.30	
Iron	7439-89-6	Lead Frame	0.242	0.429	2,415		<b>Total 100.00</b>			
Phosphorous	7723-14-0	Lead Frame	0.026	0.047	263	18.64				
Zinc (Metal)	7440-44-0	Lead Frame	0.016	0.028	158		(mg) Total	Lead Frame	% of Total Weight	
Silver (Ag)	7440-22-4	Die Attach	0.589	1.045	5,888				10.5	
Proprietary Resin	Trade Secret	Die Attach	0.139	0.246	1,388		Copper	7440-50-8	97.30	
Proprietary Curing agent & Hardener	Trade Secret	Die Attach	0.023	0.040	225		Iron	7439-89-6	2.30	
Silicon	7440-21-3	Chip (Die)	7.500	13.313	75,000		Phosphorous	7723-14-0	0.25	
Gold	7440-57-5	Wire Bond	0.200	0.355	2,000		Zinc (Metal)	7440-44-0	0.15	
Nickel	7440-02-0	Plating on external leads (pins) / annealed at 150°C for 1 hour	1.125	1.997	11,250		<b>Total 100.00</b>			
Palladium	7440-05-03	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625	1.33				
Gold	7440-57-5	Plating on external leads (pins) / annealed at 150°C for 1 hour	0.063	0.111	625		(mg) Total	Die Attach	% of Total Weight	
<b>0.1775 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>177.500</b>	<b>1,000,000</b>			0.75	
<p>This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.</p> <p>Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a></p> <p>The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.</p> <p>Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.</p> <p>Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.</p> <p>Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.</p>										
						13.31	Total (mg)	Chip (Die)	% of Total Weight	7.5
							Doped Silicon	7440-21-3	100	
							<b>Total 100.00</b>			
						0.36	(mg) Total	Wire Bond	% of Total Weight	0.2
							Doped Gold	7440-57-5	100	
							<b>Total 100.00</b>			
						2.22	(mg) Total	Plating on external leads (pins) / annealed at 150°C for 1 hour	% of Total Weight	1.25
							Nickel	7440-02-0	90.00	
							Palladium	7440-05-03	5.00	
							Gold	7440-57-5	5.00	
							<b>Total 100.00</b>			
						<b>177.500</b>				<b>100.000</b>



Semiconductor Device Type: B1KE 48 TFBGA 8x10x1.2mm (9T)						Termination Base Alloy: Copper Base (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e1
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	71.63	(mg) Total	Mold Compound	% of Total Weight	50.3		
FUSED SILICA	60676-86-0	Mold Compound	38.981	55,509	389,810		FUSED SILICA	60676-86-0	77.50			
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.905	6.984	49,048		EPOXY RESINS, CURED	Trade Secret	9.75			
HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.905	6.984	49,048		HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	9.75			
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.258	1.791	12,580		CRYSTALLINE SILICA	14808-60-7	2.50			
CARBON BLACK	1333-86-4	Mold Compound	0.252	0.358	2,515		CARBON BLACK	1333-86-4	0.50			
Copper	7440-50-8	Lead Frame	8.052	11.467	80,524		<b>Total 100.00</b>					
Glass fibers	65997-17-3	Lead Frame	4.800	6.835	48,000	31.94	(mg) Total	Lead Frame	% of Total Weight	22.43		
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	4.800	6.835	48,000		Copper	7440-50-8	35.90			
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	2.555	17,944		Glass fibers	65997-17-3	21.40			
Nickel	7440-02-0	Lead Frame	0.875	1.246	8,748		Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40			
Barite	7727-43-7	Lead Frame	0.561	0.799	5,608		Silica, chemically prepared	7631-86-9	8.00			
Magnesium silicate	14807-96-6	Lead Frame	0.449	0.639	4,486		Nickel	7440-02-0	3.90			
Araldite GY 250	25068-38-6	Lead Frame	0.449	0.639	4,486		Barite	7727-43-7	2.50			
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.179	0.256	1,794		Magnesium silicate	14807-96-6	2.00			
Misc.	system	Lead Frame	0.336	0.479	3,365		Araldite GY 250	25068-38-6	2.00			
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.112	0.160	1,122		(2- Methoxymethylethoxy)pr opropanol	34590-94-8	0.80			
Gold	7440-57-5	Lead Frame	0.022	0.032	224		Misc.	system	1.50			
Silver	7440-22-4	Die Attach	0.552	0.786	5,520		Aluminium-hydroxide- oxide	24623-77-6	0.50			
Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	Die Attach	0.138	0.197	1,380		Gold	7440-57-5	0.10			
Silicon	7440-21-3	Chip (Die)	7.650	10.894	76,500		<b>Total 100.00</b>					
Doped Gold	7440-57-5	Wire Bond	0.860	1.225	8,600	0.98	(mg) Total	Die Attach	% of Total Weight	0.69		
Tin	7440-31-5	Plating on external leads (pins)	17.257	24.574	172,569		Silver	7440-22-4	80.00			
Silver	7440-22-4	Plating on external leads (pins)	0.723	1.029	7,228		Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	20.00			
Copper	7440-50-8	Plating on external leads (pins)	0.090	0.129	904		<b>Total 100.00</b>					
<b>0.1424 g Total Mass</b>						<b>TOTALS:</b>			<b>100.000</b>	<b>142.400</b>	<b>1,000,000</b>	
						<b>10.89</b>	<b>(mg) Total</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.65</b>		
							Doped Silicon	7440-21-3	100			
						<b>Total 100.00</b>						
						<b>1.22</b>	<b>(mg) Total</b>	<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.86</b>		
							Doped Gold	7440-57-5	100.00			
						<b>Total 100.00</b>						
						<b>25.73</b>	<b>(mg) Total</b>	<b>Plating on external leads (pins)</b>	<b>% of Total Weight</b>	<b>18.07</b>		
							Tin	7440-31-5	95.50			
							Silver	7440-22-4	4.00			
							Copper	7440-50-8	0.50			
						<b>Total 100.00</b>						

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and for analytical test data.

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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <http://ul.com/global/eng/pages/offers/industries/chemicals/plastics/>

The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.

Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.

Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.

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Semiconductor Device Type: B3KE 48 TFBGA 6x8x1.2 mm (8T)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e1		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	47.33 (mg) Total		Mold Compound	% of Total Weight	50.3		
FUSED SILICA	60676-86-0	Mold Compound	38.981	36.681	389,810	MOLECULAR EPOXY / EPOXY PHENOL RESIN	FUSED SILICA	60676-86-0	77.50			
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4.905	4.615	49,048		EPOXY RESINS, CURED	Trade Secret	9.75			
HIGH CROSS-LINKED HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4.905	4.615	49,048		EPOXY / EPOXY PHENOL RESIN	Trade Secret	9.75			
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1.258	1.184	12,580		CRYSTALLINE SILICA	14808-60-7	2.50			
CARBON BLACK	1333-86-4	Mold Compound	0.252	0.237	2,515		CARBON BLACK	1333-86-4	0.50			
						<b>Total</b>		<b>100.00</b>				
Copper	7440-50-8	Lead Frame	8.052	7.577	80,524	(2-Methoxymethylethoxy)propanol	<b>21.11 (mg) Total</b>		<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>22.43</b>	
Glass fibers	65997-17-3	Lead Frame	4.800	4.517	48,000		Copper	7440-50-8	35.90			
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	4.800	4.517	48,000		Glass fibers	65997-17-3	21.40			
Silica, chemically prepared	7631-86-9	Lead Frame	1.794	1.689	17,944		Phenol, polymer	9003-36-5	21.40			
Nickel	7440-02-0	Lead Frame	0.875	0.823	8,748		Silica, chemically prepared	7631-86-9	8.00			
Barite	7727-43-7	Lead Frame	0.561	0.528	5,608		Nickel	7440-02-0	3.90			
Magnesium silicate	14807-96-6	Lead Frame	0.449	0.422	4,486		Barite	7727-43-7	2.50			
Araldite GY 250	25068-38-6	Lead Frame	0.449	0.422	4,486		Magnesium silicate	14807-96-6	2.00			
(2-Methoxymethylethoxy)propanol	34590-94-8	Lead Frame	0.179	0.169	1,794		Araldite GY 250	25068-38-6	2.00			
Misc. system		Lead Frame	0.336	0.317	3,365		(2-Methoxymethylethoxy)propanol	34590-94-8	0.80			
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0.112	0.106	1,122		Misc. system		1.50			
Gold	7440-57-5	Lead Frame	0.022	0.021	224		Aluminium-hydroxide-oxide	24623-77-6	0.50			
Silver	7440-22-4	Die Attach	0.552	0.519	5,520		Gold	7440-57-5	0.10			
Basic Duromer:Phenolic resin (Compound of polymeric network)	26834-02-6	Die Attach	0.138	0.130	1,380		<b>Total</b>		<b>100.00</b>			
Silicon	7440-21-3	Chip (Die)	7.650	7.199	76,500		<b>0.65 (mg) Total</b>		<b>Die Attach</b>		<b>% of Total Weight</b>	<b>0.69</b>
Doped Gold	7440-57-5	Wire Bond	0.860	0.809	8,600	Silver	7440-22-4	80.00				
Tin	7440-31-5	Plating on external leads (pins)	17.257	16.239	172,569	Phenolic resin	26834-02-6	20.00				
Silver	7440-22-4	Plating on external leads (pins)	0.723	0.680	7,228	<b>Total</b>		<b>100.00</b>				
Copper	7440-50-8	Plating on external leads (pins)	0.090	0.085	904	<b>7.20 (mg) Total</b>		<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.65</b>		
<b>TOTALS: 100.000 94.100 1,000,000</b>						<b>7.20 (mg) Total</b>		<b>7440-21-3</b>	<b>100</b>			
<b>0.0941 g Total Mass</b>						<b>0.81 (mg) Total</b>		<b>Wire Bond</b>	<b>% of Total Weight</b>	<b>0.86</b>		
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						<b>Doped Silicon</b>		<b>7440-21-3</b>	<b>100.00</b>			
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data.						<b>Total</b>		<b>100.00</b>				
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.						<b>17.00 (mg) Total</b>		<b>Plating on external leads (pins)</b>	<b>% of Total Weight</b>	<b>18.07</b>		
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>						Tin		7440-31-5	95.50			
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.						Silver		7440-22-4	4.00			
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Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						<b>Total</b>		<b>100.00</b>				
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.												



Semiconductor Device Type: MAQE 48 WFBGA 4x6x0.8mm (3T)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e1		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	14.50	(mg) Total	Mold Compound	% of Total Weight	50.51	
FUSED SILICA	60676-86-0	Mold Compound	39,144	11,234	391,437	HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	FUSED SILICA	60676-86-0	77.50		
EPOXY RESINS, CURED	Trade Secret	Mold Compound	4,925	1,414	49,252		EPOXY RESINS, CURED	Trade Secret	9.75		
HIGH MOLECULAR EPOXY / EPOXY PHENOL RESIN	Trade Secret	Mold Compound	4,925	1,414	49,252		EPOXY PHENOL RESIN	Trade Secret	9.75		
CRYSTALLINE SILICA	14808-60-7	Mold Compound	1,263	0,363	12,633		CRYSTALLINE SILICA	14808-60-7	2.50		
CARBON BLACK	1333-86-4	Mold Compound	0,253	0,072	2,526		CARBON BLACK	1333-86-4	0.50		
Copper	7440-50-8	Lead Frame	8,616	2,473	86,160	<b>Total 100.00</b>					
Glass fibers	65997-17-3	Lead Frame	5,136	1,474	51,360	6.89	(mg) Total	Lead Frame	% of Total Weight	24	
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Lead Frame	5,136	1,474	51,360	Phenol, formaldehyde, (chloromethyl)oxirane polymer	Copper	7440-50-8	35.90		
Silica, chemically prepared	7631-86-9	Lead Frame	1,920	0,551	19,200		Glass fibers	65997-17-3	21.40		
Nickel	7440-02-0	Lead Frame	0,936	0,269	9,360		Silica, chemically prepared	7631-86-9	8.00		
Barite	7727-43-7	Lead Frame	0,600	0,172	6,000		Nickel	7440-02-0	3.90		
Magnesium silicate	14807-96-6	Lead Frame	0,480	0,138	4,800		Barite	7727-43-7	2.50		
Araldite GY 250	25068-38-6	Lead Frame	0,480	0,138	4,800		Magnesium silicate	14807-96-6	2.00		
(2-Methoxymethyl)ethoxypropanol	34590-94-8	Lead Frame	0,192	0,055	1,920		Araldite GY 250	25068-38-6	2.00		
Misc. system		Lead Frame	0,360	0,103	3,600		(2-Methoxymethyl)ethoxypropanol	34590-94-8	0.80		
Aluminium-hydroxide-oxide	24623-77-6	Lead Frame	0,120	0,034	1,200		Misc. system		1.50		
Gold	7440-57-5	Lead Frame	0,024	0,007	240		Aluminium-hydroxide-oxide	24623-77-6	0.50		
Solid Epoxy Resin	Trade Secret	Die Attach	0,020	0,006	195	Gold	7440-57-5	0.10			
Phenol Resin	Trade Secret	Die Attach	0,020	0,006	195	<b>Total 100.00</b>					
Fused Silica	60676-86-0	Die Attach	0,052	0,015	520	0.04	(mg) Total	Die Attach	% of Total Weight	0.13	
Liquid epoxy resin	Trade Secret	Die Attach	0,020	0,006	195	Solid Epoxy Resin	Trade Secret	15.00			
Synthetic Rubber	Trade Secret	Die Attach	0,020	0,006	195		Phenol Resin	Trade Secret		15.00	
Silicon	7440-21-3	Chip (Die)	5,980	1,716	59,800		Fused Silica	60676-86-0		40.00	
Doped Gold	7440-57-5	Wire Bond	1,870	0,537	18,700		Liquid epoxy resin	Trade Secret		15.00	
Tin	7440-31-5	Plating on external leads (pins)	16,722	4,799	167,221		Synthetic Rubber	Trade Secret		15	
Silver	7440-22-4	Plating on external leads (pins)	0,700	0,201	7,004	<b>Total 100.00</b>					
Copper	7440-50-8	Plating on external leads (pins)	0,088	0,025	876	1.72	(mg) Total	Chip (Die)	% of Total Weight	5.98	
<b>TOTALS: 100.000 28.700 1,000.000</b>						<b>0.0287 g Total Mass</b>					
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and/or analytical test data.											
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offers/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offers/industries/chemicals/plastics/</a>											
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						28.70			100.00		



Semiconductor Device Type: BG 121 (Lead) TFBGA 10x10x1 (2X)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e1								
			107.44	(mg) Total	Mold Compound / Halogen-Free	% of Total Weight	55.84										
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm												
fused silica	60676-86-0	Mold Compound / Halogen-Free	47.464	91.321	474.640	fused silica	60676-86-0	85.00									
solid epoxy resin	25068-38-6	Mold Compound / Halogen-Free	3.909	7.521	39.088	solid epoxy resin	25068-38-6	7.00									
phenol resin	108-95-2	Mold Compound / Halogen-Free	3.630	6.983	36.296	phenol resin	108-95-2	6.50									
Metal Hydroxide	14808-60-7	Mold Compound / Halogen-Free	0.558	1.074	5.584	Metal Hydroxide	14808-60-7	1.00									
Carbon black	1333-86-4	Mold Compound / Halogen-Free	0.279	0.537	2.792	Carbon black	1333-86-4	0.50									
Copper	7440-50-8	Substrate + Solder Mask (AUS308)Halogen-Free	7.762	14.933	77.616	<b>Total 100.00</b>											
			41.60	(mg) Total	Substrate + Solder Mask (AUS308) Halogen-Free	% of Total Weight	21.62										
Glass fibers	65997-17-3	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46.267	Copper	7440-50-8	35.90									
Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	Substrate + Solder Mask (AUS308)Halogen-Free	4.627	8.902	46.267	Glass fibers	65997-17-3	21.40									
Silica, chemically prepared	7631-86-9	Substrate + Solder Mask (AUS308)Halogen-Free	1.730	3.328	17.296	Phenol, formaldehyde, (chloromethyl)oxirane polymer	9003-36-5	21.40									
Nickel	7440-02-0	Substrate + Solder Mask (AUS308)Halogen-Free	0.843	1.622	8.432	Silica, chemically prepared	7631-86-9	8.00									
Barite	7727-43-7	Substrate + Solder Mask (AUS308)Halogen-Free	0.541	1.040	5.405	Nickel	7440-02-0	3.90									
Magnesium silicate	14807-96-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4.324	Barite	7727-43-7	2.50									
Araldite GY 250	25068-38-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.432	0.832	4.324	Magnesium silicate	14807-96-6	2.00									
(2-Methoxymethylethoxy)propanol	34590-94-8	Substrate + Solder Mask (AUS308)Halogen-Free	0.173	0.333	1.730	Araldite GY 250	25068-38-6	2.00									
Misc. system		Substrate + Solder Mask (AUS308)Halogen-Free	0.324	0.624	3.243	(2-Methoxymethylethoxy)propanol	34590-94-8	0.80									
Aluminium-hydroxide-oxide	24623-77-6	Substrate + Solder Mask (AUS308)Halogen-Free	0.108	0.208	1.081	Misc. system		1.50									
Gold	7440-57-5	Substrate + Solder Mask (AUS308)Halogen-Free	0.022	0.042	216	Aluminium-hydroxide-oxide	24623-77-6	0.50									
Silver (Ag)	7440-22-4	Die Attach	0.550	1.059	5.502	Gold	7440-57-5	0.10									
Diester Resin	Trade Secret	Die Attach	0.138	0.265	1.376	<b>Total 100.00</b>											
Acrlate Resin	Trade Secret	Die Attach	0.052	0.099	516	1.46	(mg) Total	Die Attach	% of Total Weight								
Polymeric Resin	Trade Secret	Die Attach	0.021	0.040	206	Silver (Ag)	7440-22-4	72									
For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	Chip (Die)	7.940	15.277	79.400	Diester Resin	Trade Secret	18									
Tin (Sn)	7440-31-5	Solder Ball (SAC405)	12.224	23.519	122.240	Acrlate Resin	Trade Secret	7									
Silver (Ag)	7440-22-4	Solder Ball (SAC405)	0.512	0.985	5.120	Polymeric Resin	Trade Secret	3									
Copper (Cu)	7440-50-8	Solder Ball (SAC405)	0.064	0.123	640	<b>Total 100.00</b>											
Gold (Au)	7440-57-5	Bond Wire	1.030	1.981	10,296.00	15.28	Total (mg)	Chip (Die)	% of Total Weight								
Palladium (Pd)	7440-05-3	Bond Wire	0.010	0.020	104.00	For reporting purposes, silicon integrated circuit presumed to be all silicon	7440-21-3	100									
<b>0.1924 g Total Mass</b>			<b>TOTALS:</b>	<b>100.000</b>	<b>192.400</b>	<b>1,000.000</b>	<b>Total 100.00</b>										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).									24.63	(mg) Total	Solder Ball (SAC405)	% of Total Weight	12.80				
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.												Tin (Sn)	7440-31-5	95.50			
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offering/industries/chemicals/plastics/</a>												Copper (Cu)	7440-50-8	0.50			
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.												<b>Total 100.00</b>					
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												<b>Total 100.00</b>					
												<b>192.40</b>					



Semiconductor Device Type: 04 (SAC 105) / WCSP AF/AL				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.078	1.551	15,514
Aluminum	7429-90-5	0.016	0.325	3,249
Titanium	7440-32-6	0.001	0.014	135
Arsenic	7440-38-2	1.87E-09	3.74E-08	3.74E-04
Boron	7440-42-8	2.70E-10	5.40E-09	5.40E-05
Phosphorous	7723-14-0	3.09E-11	6.19E-10	6.19E-06
Copper	7440-50-8	1.28E-03	0.026	256
Polymer	Trade Secret	0.007	0.138	1,377
Silicon	7440-21-3	4.647	92.947	929,470
Tin	7440-31-5	0.246	4.925	49,250
Silver	7440-22-4	0.003	0.050	500
Copper	7440-50-8	0.001	0.025	250
<b>Totals:</b>		<b>5.00</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 05 (SAC 105) / WCSP AG				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.087	1.542	15,423
Aluminum	7429-90-5	0.018	0.323	3,230
Titanium	7440-32-6	0.001	0.013	134
Arsenic	7440-38-2	2.09E-09	3.72E-08	3.72E-04
Boron	7440-42-8	3.02E-10	5.37E-09	5.37E-05
Phosphorous	7723-14-0	3.46E-11	6.15E-10	6.15E-06
Copper	7440-50-8	1.43E-03	0.025	254
Polymer	Trade Secret	0.008	0.137	1,369
Silicon	7440-21-3	5.198	92.403	924,034
Tin	7440-31-5	0.308	5.472	54,722
Silver	7440-22-4	0.003	0.056	556
Copper	7440-50-8	0.002	0.028	278
<b>Totals:</b>		<b>5.6250</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 08 (SAC 105) / WCSP AC				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.380	1.542	15,423
Aluminum	7429-90-5	0.080	0.323	3,230
Titanium	7440-32-6	0.003	0.013	134
Arsenic	7440-38-2	9.17E-09	3.72E-08	3.72E-04
Boron	7440-42-8	1.32E-09	5.37E-09	5.37E-05
Phosphorous	7723-14-0	1.52E-10	6.15E-10	6.15E-06
Copper	7440-50-8	6.27E-03	0.025	254
Polymer	Trade Secret	0.034	0.137	1,369
Silicon	7440-21-3	22.793	92.403	924,034
Tin	7440-31-5	1.350	5.472	54,722
Silver	7440-22-4	0.014	0.056	556
Copper	7440-50-8	0.007	0.028	278
<b>Totals:</b>		<b>24.67</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 08 (SAC 305) / WCSP FA				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.243	1.542	15,423
Aluminum	7429-90-5	0.051	0.323	3,230
Titanium	7440-32-6	0.002	0.013	134
Arsenic	7440-38-2	5.86E-09	3.72E-08	3.72E-04
Boron	7440-42-8	8.46E-10	5.37E-09	5.37E-05
Phosphorous	7723-14-0	9.70E-11	6.15E-10	6.15E-06
Copper	7440-50-8	4.01E-03	0.025	254
Polymer	Trade Secret	0.022	0.137	1,369
Silicon	7440-21-3	14.570	92.403	924,034
Tin	7440-31-5	0.845	5.361	53,611
Silver	7440-22-4	0.026	0.167	1,667
Copper	7440-50-8	0.004	0.028	278
<b>Totals:</b>		<b>15.77</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 14 (SAC 105) / WCSP AP				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.214	1.531	15,309
Aluminum	7429-90-5	0.045	0.321	3,206
Titanium	7440-32-6	0.002	0.013	133
Arsenic	7440-38-2	5.17E-09	3.69E-08	3.69E-04
Boron	7440-42-8	7.46E-10	5.33E-09	5.33E-05
Phosphorous	7723-14-0	8.55E-11	6.11E-10	6.11E-06
Copper	7440-50-8	3.53E-03	0.025	252
Polymer	Trade Secret	0.019	0.136	1,359
Silicon	7440-21-3	12.841	91.724	917,240
Tin	7440-31-5	0.862	6.156	61,563
Silver	7440-22-4	0.009	0.063	625
Copper	7440-50-8	0.004	0.031	313
<b>Totals:</b>		<b>14.0000</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 16 (SAC 305) / WCSP FB				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.429	1.531	15,309
Aluminum	7429-90-5	0.090	0.321	3,206
Titanium	7440-32-6	0.004	0.013	133
Arsenic	7440-38-2	1.03E-08	3.69E-08	3.69E-04
Boron	7440-42-8	1.49E-09	5.33E-09	5.33E-05
Phosphorous	7723-14-0	1.71E-10	6.11E-10	6.11E-06
Copper	7440-50-8	7.07E-03	0.025	252
Polymer	Trade Secret	0.038	0.136	1,359
Silicon	7440-21-3	25.712	91.724	917,240
Tin	7440-31-5	1.691	6.031	60,313
Silver	7440-22-4	0.053	0.188	1,875
Copper	7440-50-8	0.009	0.031	313
<b>Totals:</b>		<b>28.03</b>	<b>100</b>	<b>1000000</b>

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Semiconductor Device Type: 18 (SAC 105) / WCSP AM				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.418	1.516	15,164
Aluminum	7429-90-5	0.088	0.318	3,176
Titanium	7440-32-6	0.004	0.013	132
Arsenic	7440-38-2	1.01E-08	3.66E-08	3.66E-04
Boron	7440-42-8	1.46E-09	5.28E-09	5.28E-05
Phosphorous	7723-14-0	1.67E-10	6.05E-10	6.05E-06
Copper	7440-50-8	6.90E-03	0.025	250
Polymer	Trade Secret	0.037	0.135	1,346
Silicon	7440-21-3	25.069	90.850	908,504
Tin	7440-31-5	1.902	6.893	68,929
Silver	7440-22-4	0.059	0.214	2,143
Copper	7440-50-8	0.010	0.036	357
<b>Totals:</b>		<b>27.59</b>	<b>100</b>	<b>1000000</b>

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Semiconductor Device Type: 20 (SAC 105) / WCSP AE				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.465	1.516	15,164
Aluminum	7429-90-5	0.097	0.318	3,176
Titanium	7440-32-6	0.004	0.013	132
Arsenic	7440-38-2	1.12E-08	3.66E-08	3.66E-04
Boron	7440-42-8	1.62E-09	5.28E-09	5.28E-05
Phosphorous	7723-14-0	1.85E-10	6.05E-10	6.05E-06
Copper	7440-50-8	7.66E-03	0.025	250
Polymer	Trade Secret	0.041	0.135	1,346
Silicon	7440-21-3	27.855	90.850	908,504
Tin	7440-31-5	2.157	7.036	70,357
Silver	7440-22-4	0.022	0.071	714
Copper	7440-50-8	0.011	0.036	357
<b>Totals:</b>		<b>30.6600</b>	<b>100</b>	<b>1000000</b>

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Semiconductor Device Type: 28 (SAC 105) / WCSP AH				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.314	1.497	14,969
Aluminum	7429-90-5	0.066	0.314	3,135
Titanium	7440-32-6	0.003	0.013	130
Arsenic	7440-38-2	7.58E-09	3.61E-08	3.61E-04
Boron	7440-42-8	1.09E-09	5.21E-09	5.21E-05
Phosphorous	7723-14-0	1.25E-10	5.97E-10	5.97E-06
Copper	7440-50-8	5.18E-03	0.025	247
Polymer	Trade Secret	0.028	0.133	1,329
Silicon	7440-21-3	18.834	89.686	896,857
Tin	7440-31-5	1.724	8.208	82,083
Silver	7440-22-4	0.018	0.083	833
Copper	7440-50-8	0.009	0.042	417
<b>Totals:</b>		<b>21.00</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.

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Semiconductor Device Type: 32 (SAC 105) / WCS AD				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.629	1.497	14,969
Aluminum	7429-90-5	0.132	0.314	3,135
Titanium	7440-32-6	0.005	0.013	130
Arsenic	7440-38-2	1.52E-08	3.61E-08	3.61E-04
Boron	7440-42-8	2.19E-09	5.21E-09	5.21E-05
Phosphorous	7723-14-0	2.51E-10	5.97E-10	5.97E-06
Copper	7440-50-8	1.04E-02	0.025	247
Polymer	Trade Secret	0.056	0.133	1,329
Silicon	7440-21-3	37.711	89.686	896,857
Tin	7440-31-5	3.451	8.208	82,083
Silver	7440-22-4	0.035	0.083	833
Copper	7440-50-8	0.018	0.042	417
<b>Totals:</b>		<b>42.048</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 44 (SAC 105) / WCSP AQ				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	1.071	1.470	14,697
Aluminum	7429-90-5	0.224	0.308	3,078
Titanium	7440-32-6	0.009	0.013	128
Arsenic	7440-38-2	2.58E-08	3.54E-08	3.54E-04
Boron	7440-42-8	3.73E-09	5.11E-09	5.11E-05
Phosphorous	7723-14-0	4.27E-10	5.86E-10	5.86E-06
Copper	7440-50-8	1.76E-02	0.024	242
Polymer	Trade Secret	0.095	0.130	1,305
Silicon	7440-21-3	64.160	88.055	880,550
Tin	7440-31-5	7.177	9.850	98,500
Silver	7440-22-4	0.073	0.100	1,000
Copper	7440-50-8	0.036	0.050	500
<b>Totals:</b>		<b>72.86</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 48 (SAC 305) / WCSP FC				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	0.279	1.470	14,697
Aluminum	7429-90-5	0.058	0.308	3,078
Titanium	7440-32-6	0.002	0.013	128
Arsenic	7440-38-2	6.72E-09	3.54E-08	3.54E-04
Boron	7440-42-8	9.70E-10	5.11E-09	5.11E-05
Phosphorous	7723-14-0	1.11E-10	5.86E-10	5.86E-06
Copper	7440-50-8	4.59E-03	0.024	242
Polymer	Trade Secret	0.025	0.130	1,305
Silicon	7440-21-3	16.695	88.055	880,550
Tin	7440-31-5	1.830	9.650	96,500
Silver	7440-22-4	0.057	0.300	3,000
Copper	7440-50-8	0.009	0.050	500
<b>Totals:</b>		<b>18.960</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 48 (SAC 266) / WCSP AK				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	1.168	1.470	14,697
Aluminum	7429-90-5	0.245	0.308	3,078
Titanium	7440-32-6	0.010	0.013	128
Arsenic	7440-38-2	2.82E-08	3.54E-08	3.54E-04
Boron	7440-42-8	4.07E-09	5.11E-09	5.11E-05
Phosphorous	7723-14-0	4.66E-10	5.86E-10	5.86E-06
Copper	7440-50-8	1.93E-02	0.024	242
Polymer	Trade Secret	0.104	0.130	1,305
Silicon	7440-21-3	69.993	88.055	880,550
Tin	7440-31-5	7.694	9.680	96,800
Silver	7440-22-4	0.207	0.260	2,600
Copper	7440-50-8	0.048	0.060	600
<b>Totals:</b>		<b>79.4880</b>	<b>100</b>	<b>1000000</b>

This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).

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Semiconductor Device Type: 64 (SAC 305) / WCSP DY				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	1.212	1.429	14,289
Aluminum	7429-90-5	0.254	0.299	2,993
Titanium	7440-32-6	0.011	0.012	124
Arsenic	7440-38-2	2.92E-08	3.44E-08	3.44E-04
Boron	7440-42-8	4.22E-09	4.97E-09	4.97E-05
Phosphorous	7723-14-0	4.83E-10	5.70E-10	5.70E-06
Copper	7440-50-8	2.00E-02	0.024	235
Polymer	Trade Secret	0.108	0.127	1,268
Silicon	7440-21-3	72.586	85.609	856,090
Tin	7440-31-5	10.227	12.063	120,625
Silver	7440-22-4	0.318	0.375	3,750
Copper	7440-50-8	0.053	0.063	625
<b>Totals:</b>		<b>84.79</b>	<b>100</b>	<b>1000000</b>

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Semiconductor Device Type: 80 (SAC 305) / WCSP FS				
Basic Substance	CAS Number	mg/part	% Total Weight	ppm
Tungsten	7440-33-7	1.082	1.361	13,608
Aluminum	7429-90-5	0.227	0.285	2,850
Titanium	7440-32-6	0.009	0.012	119
Arsenic	7440-38-2	2.61E-08	3.28E-08	3.28E-04
Boron	7440-42-8	3.76E-09	4.74E-09	4.74E-05
Phosphorous	7723-14-0	4.31E-10	5.43E-10	5.43E-06
Copper	7440-50-8	1.78E-02	0.022	224
Polymer	Trade Secret	0.096	0.121	1,208
Silicon	7440-21-3	64.808	81.532	815,324
Tin	7440-31-5	12.784	16.083	160,833
Silver	7440-22-4	0.397	0.500	5,000
Copper	7440-50-8	0.066	0.083	833
<b>Totals:</b>		<b>79.4880</b>	<b>100</b>	<b>1000000</b>

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Semiconductor Device Type: P and PA 8 (Lead) PDIP (Small Outline - .300") (C4 / CK)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	388.39	(mg) Total	Mold Compound	% of Total Weight	79.8
Fused Silica	60676-86-0	Mold Compound	57.456	279.638	574,560		Fused Silica	60676-86-0	72.00	
Metal Hydro Oxide	Trade Secret	Mold Compound	8.778	42.723	87,780		Metal Hydro Oxide	Trade Secret	11.00	
Epoxy Resin	Trade Secret	Mold Compound	5.586	27.187	55,860		Epoxy Resin	Trade Secret	7.00	
Phenol Resin	Trade Secret	Mold Compound	5.586	27.187	55,860		Phenol Resin	Trade Secret	7.00	
SiO2	14808-60-7	Mold Compound	1.995	9.710	19,950		SiO2	14808-60-7	2.50	
Carbon Black	1333-86-4	Mold Compound	0.399	1.942	3,990		Carbon Black	1333-86-4	0.50	
							<b>Total</b>		<b>100.00</b>	
Copper	7440-50-8	Lead Frame	10.031	48.823	100,314					
Iron	7439-89-6	Lead Frame	0.247	1.201	2,468	51.10	<b>(mg) Total</b>	<b>Lead Frame</b>	<b>% of Total Weight</b>	<b>10.5</b>
Silver	7440-22-4	Lead Frame	0.200	0.974	2,000		Copper	7440-50-8	95.54	
Zinc	7440-66-6	Lead Frame	0.013	0.064	131		Iron	7439-89-6	2.35	
Phosphorous	7723-14-0	Lead Frame	0.009	0.042	87		Silver	7440-22-4	1.91	
Silver	7440-22-4	Die Attach	0.550	2.678	5,502		Zinc	7440-66-6	0.13	
Epoxy Resin	9003-36-5	Die Attach	0.110	0.535	1,100		Phosphorous	7723-14-0	0.08	
Diluent	3101-60-8	Die Attach	0.055	0.268	550		<b>Total</b>			<b>100.00</b>
Phenolic hardener	Trade secret	Die Attach	0.022	0.107	220	3.65	<b>(mg) Total</b>	<b>Die Attach</b>	<b>% of Total Weight</b>	<b>0.75</b>
Amine type hardener	827-43-0	Die Attach	0.011	0.054	110		Silver	7440-22-4	73.36	
Dicyandiamide	461-58-5	Die Attach	0.002	0.009	18		Epoxy Resin	9003-36-5	14.67	
Silicon	7440-21-3	Chip (Die)	7.500	36.503	75,000		Diluent	3101-60-8	7.33	
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.956	1,965		Phenolic hardener	Trade secret	2.93	
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.017	35		Amine type hardener	827-43-0	1.47	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	6.084	12,500		Dicyandiamide	461-58-5	0.24	
<b>TOTALS:</b>			<b>100.000</b>	<b>486.700</b>	<b>1,000,000</b>		<b>Total</b>			<b>100.00</b>
<b>0.4867 g Total Mass</b>										
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						36.50	<b>Total (mg)</b>	<b>Chip (Die)</b>	<b>% of Total Weight</b>	<b>7.5</b>
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.							Doped Silicon	7440-21-3	100	
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.						<b>Total</b>			<b>100.00</b>	
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>						0.97	<b>(mg) Total</b>	<b>Wire Bond - Copper, palladium coated (CuPd)</b>	<b>% of Total Weight</b>	<b>0.2</b>
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.							Copper	7440-50-8	98	
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Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.						<b>Total</b>			<b>100.00</b>	
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.						6.08	<b>(mg) Total</b>	<b>Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour</b>	<b>% of Total Weight</b>	<b>1.25</b>
							Tin	7440-31-5	100.00	
						<b>Total</b>			<b>100.00</b>	
						486.700				100.000





Semiconductor Device Type: OA and SN 08 (Lead) (SOIC) (Small Outline -150mil) (C2)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight			
Silica, vitreous	60676-86-0	Mold Compound	69.354	54.096	693,542	62.24	Silica, vitreous	60676-86-0	86.91		
Epoxy Resin	Trade Secret	Mold Compound	6.121	4.774	61,207		Epoxy Resin	Trade Secret	7.67		
Phenolic Resin	Trade Secret	Mold Compound	4.078	3.181	40,778		Phenolic Resin	Trade Secret	5.11		
Carbon Black	1333-86-4	Mold Compound	0.247	0.193	2,474		Carbon Black	1333-86-4	0.31		
							<b>Total</b>			<b>100.00</b>	
Copper	7440-50-8	Lead Frame	10.031	7.825	100,314	8.19					
Iron	7439-89-6	Lead Frame	0.247	0.192	2,468						
Silver	7440-22-4	Lead Frame	0.200	0.156	2,000						
Zinc	7440-66-6	Lead Frame	0.013	0.010	131						
Phosphorous	7723-14-0	Lead Frame	0.009	0.007	87						
Silver (Ag)	7440-22-4	Die Attach	0.563	0.439	5,625	0.59	Copper	7440-50-8	95.54		
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.082	1,050		Iron	7439-89-6	2.35		
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.044	563		Silver	7440-22-4	1.91		
Modified Amine	827-43-0	Die Attach	0.026	0.020	263		Zinc	7440-66-6	0.13		
							<b>Total</b>			<b>100.00</b>	
Silicon	7440-21-3	Chip (Die)	7.500	5.850	75,000	5.85	Silver (Ag)	7440-22-4	75		
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.153	1,965		Modified Epoxy Resin	13561-08-5	14		
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.003	35		Diglycidylether of bisphenol-F	54208-63-8	8		
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.975	12,500		Modified Amine	827-43-0	4		
							<b>Total</b>			<b>100.00</b>	
<b>0.0780 g Total Mass</b>						<b>TOTALS:</b>	<b>100.000</b>	<b>78.000</b>	<b>1,000.000</b>		
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).											
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.											
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.											
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>											
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.											
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.											
Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.											
Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.											
						0.16		(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
								Copper	7440-50-8	98	
								Palladium	7440-05-3	2	
								<b>Total</b>		<b>100.00</b>	
						0.98		(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
								Tin	7440-31-5	100.00	
								<b>Total</b>		<b>100.00</b>	
						<b>78.000</b>				<b>100.000</b>	



Semiconductor Device Type: SM 08 (Lead) SOIJ (Small Outline-208 mil) (C3)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3	
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight		
Silica, vitreous	60676-86-0	Mold Compound	69.354	86.277	693,542	99.27	Silica, vitreous 60676-86-0 Epoxy Resin Trade Secret Phenolic Resin Trade Secret Carbon Black 1333-86-4	86.91 7.67 5.11 0.31	79.8	
Epoxy Resin	Trade Secret	Mold Compound	6.121	7.614	61,207					
Phenolic Resin	Trade Secret	Mold Compound	4.078	5.073	40,778					
Carbon Black	1333-86-4	Mold Compound	0.247	0.308	2,474					
Copper	7440-50-8	Lead Frame	10.031	12.479	100,314					
Iron	7439-89-6	Lead Frame	0.247	0.307	2,468	13.06	Lead Frame	100.00	10.5	
Silver	7440-22-4	Lead Frame	0.200	0.249	2,000					
Zinc	7440-66-6	Lead Frame	0.013	0.016	131					
Phosphorous	7723-14-0	Lead Frame	0.009	0.011	87					
Silver (Ag)	7440-22-4	Die Attach	0.563	0.700	5,625					
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.131	1,050	0.93	Die Attach	100.00	0.75	
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.070	563					
Modified Amine	827-43-0	Die Attach	0.026	0.033	263					
Silicon	7440-21-3	Chip (Die)	7.500	9.330	75,000					
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.244	1,965					
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.004	35	9.33	Chip (Die)	100.00	7.5	
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	1.555	12,500					
<b>TOTALS:</b>			<b>100.000</b>	<b>124.400</b>	<b>1,000,000</b>					
<b>0.1244 g Total Mass</b>										
<p>This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).</p> <p>Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.</p> <p>If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.</p> <p>Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a></p> <p>The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.</p> <p>Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.</p> <p>Microchip Technology Incorporated does not provide any warranty, express or implied, with respect to the information provided in this declaration. The exclusive, limited product warranties provided by Microchip Technology Incorporated and its subsidiaries are contained in Microchip's standard terms and conditions of sale. These are provided in Microchip's quotations, sales order acknowledgement, and invoices.</p> <p>Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.</p>										
						Doped Silicon		7440-21-3	100	
						Copper		7440-50-8	98	
						Palladium		7440-05-3	2	
						Total		100.00		
						Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour				
						(mg) Total				
						Tin		7440-31-5	100.00	
						Total		100.00		
						124.400				100.000



Semiconductor Device Type: CT and OT 05 (Lead) SOT-23 (C7)			Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3		
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	(mg) Total	Mold Compound	% of Total Weight			
Silica, vitreous	60676-86-0	Mold Compound	69.354	11.097	693,542	12.77	Silica, vitreous	60676-86-0	86.91		
Epoxy Resin	Trade Secret	Mold Compound	6.121	0.979	61,207		Epoxy Resin	Trade Secret	7.67		
Phenolic Resin	Trade Secret	Mold Compound	4.078	0.652	40,778		Phenolic Resin	Trade Secret	5.11		
Carbon Black	1333-86-4	Mold Compound	0.247	0.040	2,474		Carbon Black	1333-86-4	0.31		
			<b>Total</b>				<b>100.00</b>				
Copper	7440-50-8	Lead Frame	10.031	1.605	100,314	1.68			10.5		
Iron	7439-89-6	Lead Frame	0.247	0.039	2,468						
Silver	7440-22-4	Lead Frame	0.200	0.032	2,000						
Zinc	7440-66-6	Lead Frame	0.013	0.002	131						
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87						
Silver (Ag)	7440-22-4	Die Attach	0.563	0.090	5,625	0.12	Copper	7440-50-8	95.54		
Modified Epoxy Resin	13561-08-5	Die Attach	0.105	0.017	1,050		Iron	7439-89-6	2.35		
Diglycidylether of bisphenol-F	54208-63-8	Die Attach	0.056	0.009	563		Silver	7440-22-4	1.91		
Modified Amine	827-43-0	Die Attach	0.026	0.004	263		Zinc	7440-66-6	0.13		
			<b>Total</b>				<b>100.00</b>				
Silicon	7440-21-3	Chip (Die)	7.500	1.200	75,000	0.03			0.2		
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.031	1,965						
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35						
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.200	12,500						
			<b>TOTALS:</b>				<b>100.000 16.000 1,000.000</b>				
<b>0.0160 g Total Mass</b>											
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).						1.20		Total (mg)	Chip (Die)	% of Total Weight	7.5
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.								Doped Silicon	7440-21-3	100	
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Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>						0.03		(mg) Total	Wire Bond - Copper, palladium coated (CuPd)	% of Total Weight	0.2
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.								Copper	7440-50-8	98	
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Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.						0.20		(mg) Total	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	% of Total Weight	1.25
								Tin	7440-31-5	100.00	
								Total 100.00			
						16.000					100.000



Semiconductor Device Type: CH and OT 06 (Lead) SOT-23 (C8)				Termination Base Alloy: Copper Alloy (Cu)			Package Homogeneous Materials: 8.1 Electronics (e.g. pc boards, displays)			JEDEC 97 Product Marking and/or Pkg. Labeling e3																														
Basic Substance	CAS Number	"Contained In" Sub-Component	% Total Weight	mg/part	ppm	13.57	(mg) Total	Mold Compound	% of Total Weight	79.8																														
Silica, vitreous	60676-86-0	Mold Compound	69.354	11.790	693,542	<table border="1"> <tr><td>Silica, vitreous</td><td>60676-86-0</td><td>86.91</td></tr> <tr><td>Epoxy Resin</td><td>Trade Secret</td><td>7.67</td></tr> <tr><td>Phenolic Resin</td><td>Trade Secret</td><td>5.11</td></tr> <tr><td>Carbon Black</td><td>1333-86-4</td><td>0.31</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	Silica, vitreous	60676-86-0	86.91	Epoxy Resin	Trade Secret	7.67	Phenolic Resin	Trade Secret	5.11	Carbon Black	1333-86-4	0.31	Total			100.00																		
Silica, vitreous	60676-86-0	86.91																																						
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Epoxy Resin (No bromine, No diantimony trioxide)	Trade Secret	Mold Compound	6.121	1.041	61,207																																			
Phenolic Resin (No Br / CL SbO3, No diantimony trioxide)	Trade Secret	Mold Compound	4.078	0.693	40,778																																			
Carbon Black	1333-86-4	Mold Compound	0.247	0.042	2,474																																			
Copper	7440-50-8	Lead Frame	10.031	1.705	100,314	<table border="1"> <tr><td colspan="3">(mg) Total</td><td>1.79</td></tr> <tr><td colspan="3">Lead Frame</td><td></td></tr> <tr><td colspan="3">% of Total Weight</td><td>10.5</td></tr> <tr><td>Copper</td><td>7440-50-8</td><td>95.54</td></tr> <tr><td>Iron</td><td>7439-89-6</td><td>2.35</td></tr> <tr><td>Silver</td><td>7440-22-4</td><td>1.91</td></tr> <tr><td>Zinc</td><td>7440-66-6</td><td>0.13</td></tr> <tr><td>Phosphorous</td><td>7723-14-0</td><td>0.08</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			1.79	Lead Frame				% of Total Weight			10.5	Copper	7440-50-8	95.54	Iron	7439-89-6	2.35	Silver	7440-22-4	1.91	Zinc	7440-66-6	0.13	Phosphorous	7723-14-0	0.08	Total			100.00			
(mg) Total			1.79																																					
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Zinc	7440-66-6	Lead Frame	0.013	0.002	131																																			
Phosphorous	7723-14-0	Lead Frame	0.009	0.001	87	<table border="1"> <tr><td colspan="3">(mg) Total</td><td>0.13</td></tr> <tr><td colspan="3">Die Attach</td><td></td></tr> <tr><td colspan="3">% of Total Weight</td><td>0.75</td></tr> <tr><td>Epoxy resin</td><td>Trade Secret</td><td>75</td></tr> <tr><td>Silicon dioxide</td><td>7631-86-9</td><td>23</td></tr> <tr><td>Curing / Hardener</td><td>Trade Secret</td><td>3</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			0.13	Die Attach				% of Total Weight			0.75	Epoxy resin	Trade Secret	75	Silicon dioxide	7631-86-9	23	Curing / Hardener	Trade Secret	3	Total			100.00									
(mg) Total			0.13																																					
Die Attach																																								
% of Total Weight			0.75																																					
Epoxy resin	Trade Secret	75																																						
Silicon dioxide	7631-86-9	23																																						
Curing / Hardener	Trade Secret	3																																						
Total			100.00																																					
Epoxy resin	Trade Secret	Die Attach	0.563	0.096	5,625																																			
Silicon dioxide	Trade Secret	Die Attach	0.169	0.029	1,688																																			
Curing / Hardener	Polymenc Retanning Agent	Die Attach	0.019	0.003	188																																			
Silicon	7440-21-3	Chip (Die)	7.500	1.275	75,000	<table border="1"> <tr><td colspan="3">(mg) Total</td><td>1.28</td></tr> <tr><td colspan="3">Chip (Die)</td><td></td></tr> <tr><td colspan="3">% of Total Weight</td><td>7.5</td></tr> <tr><td>Doped Silicon</td><td>7440-21-3</td><td>100</td></tr> <tr><td colspan="3">Total</td><td>100.00</td></tr> </table>	(mg) Total			1.28	Chip (Die)				% of Total Weight			7.5	Doped Silicon	7440-21-3	100	Total			100.00															
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Total			100.00																																					
Copper	7440-50-8	Wire Bond palladium coated copper (CuPd)	0.197	0.033	1,965																																			
Palladium	7440-05-3	Wire Bond palladium coated copper (CuPd)	0.004	0.001	35																																			
Tin	7440-31-5	Plating on external leads (pins) - Matte Tin / annealed at 150°C for 1 hour	1.250	0.213	12,500																																			
<b>TOTALS:</b>			<b>100.000</b>	<b>17.000</b>	<b>1,000,000</b>																																			
<b>0.0170 g Total Mass</b>																																								
This semiconductor device and its homogenous materials comply with EU Directive 2002/95/EC (RoHS Directive), EU Directive 2011/65/EU (RoHS Recast Directive) and with EU Directive 2002/53/EC (End-of-Life Vehicles (ELV) Directive).																																								
Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.																																								
If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.																																								
Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL IQTM family of databases to obtain a test report at <a href="http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/">http://ul.com/global/eng/pages/offerings/industries/chemicals/plastics/</a>																																								
The protective "tubes" in which the specific product is shipped are made from polyvinyl chloride (PVC) plastic. "Window envelopes" used to hold the packing slip on the outer box and certain "reels" may be made from PVC plastic.																																								
Microchip Technology Incorporated believes the information in this form concerning substances restricted by RoHS in Microchip Technology Incorporated's semiconductor devices in their original packing materials is true and correct to the best of its knowledge and belief, as of the date listed in this form. Microchip Technology Incorporated cannot guarantee the completeness and accuracy of data in this form because it has been compiled based on the ranges provided in Material Safety Data Sheets provided by raw material suppliers. Supplier information is often protected from disclosure as trade secrets and some information may not have been provided by subcontract assemblers and raw material suppliers. Information is provided only as estimates of the average weight of these parts and the average weight of anticipated significant toxic metals components. These estimates do not include trace levels of dopants, metals, and non-metal materials contained within silicon devices (silicon IC) in the finished parts.																																								
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Microchip disclaims any duty to notify users of updates or changes to Material Content Declarations and shall not be liable for any damages, direct or indirect, consequential or otherwise, suffered by users or third parties as a result of the users' reliance on the information in Material Content Declarations (MCD) or independent third party test reports (SGS) or of this Certificate of Compliance for semiconductor products.																																								
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